

# THE ATHENÆUM

Journal of English and Foreign Literature, Science, and the Fine Arts

No. 2131.

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UNIVERSITY COLLEGE, LONDON.—  
FACULTY OF ARTS AND LAWS, including the Department of the APPLIED SCIENCES

SESSION 1868-69.

The SESSION will commence on FRIDAY, October 2. INTRODUCTORY LECTURE at 3 P.M., by Professor G. CRAVEN ROBERTSON, M.A. Subject: "Philosophy as a Subject of Study."

CLASSES.

Latin—Professor Seeley, M.A.  
Greek—Professor Malden, M.A.  
Gastric—Professor Gottlieb  
History—(General Professorship)—Professor Marks.  
Arabic and Persian—Professor Rieu, Ph.D.

Telugu—Professor C. P. Brown.  
Marathi—Lecturer, Mr. W. S. Price.  
Hindoo and Persian—Lecturer, Mr. K. M. Dutt.

Bengali—Professor Mr. Ghulam Ali.  
French Language and Literature—Professor H. Morley.  
Italian Language and Literature—Professor Cassal, LL.D.

German Language and Literature—Professor G. Volpe.  
Latin—Professor Heilmann, Ph.D.

Classical Greek—Professor Key, M.A., F.R.S.

Mathematics—Professor T. A. Hirst, F.R.S.

Applied Mathematics and Mechanics—Professor B. T. Moore, M.A. C.E.

Physics—Professor Carey Foster, B.A.  
Chemistry and Practical Chemistry—Professor Williamson, F.R.S.

Engineering—Professor George Fuller, C.E.

Architecture—Professor T. Hayter Lewis, F.S.A. F.I.B.A.  
Geology (Goldsmith's Professorship)—Professor Morris, F.G.S.

Mineralogy—Professor Morris, F.G.S.

Drawing—Teacher, Mr. Moore.

Botany—Professor Oliver, F.R.S.

Zoology (Recent and Fossil)—Professor Grant, M.D. F.R.S.

Philosophy of Mind and Logic—Professor G. Croom Robertson, M.A.

Ancient and Modern History—Professor Besley, M.A.

Political Economy—Professor J. E. Cairnes, M.A.

Law—Professor J. A. Russell, Q.C.

Jurisprudence—Professor J. H. Roby, M.A.

Three ANDREW'S ENTRANCE EXHIBITIONS, each of

the sum of £100, and tenable for three years, will be given at the commencement of the Session. The Competitive Examination for these Exhibitions will be in Classics, Mathematics, and Physics, and will be held on the 29th and 30th of September.

Prospectus, and the Regulations for the above and other Exhibitions, Scholarships, and Prizes, may be obtained at the Office of the College.

The Session of the Faculty of Medicine will commence on Thursday, October 1.

HENRY MORLEY, Dean of the Faculty.

JOHN ROBSON, B.A., Secretary to the Council.

KING'S COLLEGE, LONDON.—The PROSPECTUS for 1868-9 of the different Departments is now ready, and will be sent free of charge on application to J. W. CUNNINGHAM, Esq., King's College, London, putting the word "Prospectus" outside the cover.

LECTURES on MINERALOGY and GEOLOGY at KING'S COLLEGE, LONDON, are given on Wednesday evenings from 8 to 9 P.M. by Professor TENNANT, F.G.S. Those on Mineralogy begin Friday, October 2, and terminate at Christmas, Fee 2s. 2d. Those on Geology commence in January and continue till June. A shorter Course of lectures on Mineralogy will be given October and January at Easton, Fee 1s. 6d. Professor TENNANT accompanies his Students to the Public Museums and to places of Geological interest in the country. He also gives private instruction in the above at 140, Strand, London, W.C.

MEDICAL EDUCATION.—ST. MARY'S HOSPITAL MEDICAL SCHOOL, PADDINGTON, will open on OCTOBER 1st, 1868. In addition to the usual Courses, special Instruction is given in Operative Minor Surgery and Bandaging, Ophthalmic, Aural and Dental Surgery, Comparative Anatomy, Histology, and Pathology; all of which are taught practically as Demonstration as well as Lecture. For Prospectus apply to ERNEST HART, Dean of the School.

ST. BARTHOLOMEW'S HOSPITAL and COLLEGE.—WINTER SESSION, 1868-9.

The Introductory Address will be given by MR. THOMAS SMITH, THURSDAY, October 1st, at 2 P.M.

Students can reside within the Hospital walls subject to the Conditions of the Hospital.

All information respecting both the Hospital and College may be obtained on application, either personally or by letter, to the Resident Warden, Mr. MORRANT BAKER, and at the Museum or Library.

ROYAL AGRICULTURAL SOCIETY of ENGLAND.—THE COUNCIL will meet on the 1st of January, 1869, the offices of SECRETARY and EDITOR shall be combined, Gentlemen desirous of becoming Candidates must be requested to send in their applications and testimonials not later than the 20th of October next, to the Secretary of the Society, from whom all particulars can be obtained. Salary £600. per annum, with expenses, coal and gas.

11, Hanover-square, London, W.

July, 1868.

BELFAST ANNUAL EXHIBITION of PAINTINGS (Oil and Water-Colour).—THIRD SEASON.

This Exhibition will OPEN for the Season on the 1st of OCTOBER. Artists intending to exhibit will please communicate at once with the Organiser, who will forward full particulars.—MARCUS WARD & CO. LTD., Grand-place, Belfast.

August, 1868.

EDUCATION.—BAYSWATER.—First-class Establishing ESTABLISHMENT for YOUNG LADIES, conducted by the Widow of a Clergyman and her Sister. Eminent Persons of Distinguished repute.—Address Mrs. H. Waters's Library, Westbourne-grove, W.

RADOWN HOUSE, FORTIS GREEN, FINCHLEY, close to EAST-END STATION.

The PUPILS will RE-ASSEMBLE on TUESDAY, Sept. 1st.

HELEN TAYLOR.

BELFAST ACADEMY.—WANTED, a MASTER to TAKE CHARGE of the CLASSICAL and MUSICAL SCHOOLS.

The Council guarantees a minimum income of £600. per annum. Applications and Testimonials to be forwarded, on or before the 7th September, to Mr. Brows, Assistant-Secretary, who will furnish further information.

R. YOUNG, Secretary.

QUEEN'S UNIVERSITY IN IRELAND.

QUEEN'S COLLEGE, GALWAY.

The SESSION 1868-69 will commence on TUESDAY, the 20th OCTOBER, when the Supplemental, Scholarship, and other Examinations, will be proceeded with, as laid down in the Prospectus.

The Examination for Matriculation in the several Faculties of Arts, Law, and Medicine, and the Department of Engineering, will be held on FRIDAY, the 23rd OCTOBER.

Further information, and copies of the Prospectus, may be had on application to the Registrar.

By order of the President, WM. LUPTON, M.A., Registrar.

Queen's College, Galway,  
August 22, 1868.

QUEEN'S COLLEGE INSTITUTION for LADIES, TUFNELL PARK, CAMDEN-ROAD, LONDON.

RE-OPEN SEPTEMBER 18.

Fee for Residents in Finishing School, 60 Guineas per annum.

" " Middle School, 40 Guineas

" " Elementary School, 30 Guineas "

Payment reckoned from Entrance.

Governesses—Students received. Certificates granted.

For Prospectiveuses, with List of Rev. Fathers and Lady Patrons, address Mrs. Morel, Lady Principal at the College.

T R E N T C O L L E G E.

A PUBLIC SCHOOL on the Principles of the Church of England. A thoroughly good English, French, and Latin Education is given.

Terms—TEN POUNDS A QUARTER.

No extra charges, and no bills sent home.

Situation, near to Trent Station, between Derby and Nottingham.

Head Master—REV. T. F. FENN, M.A., Trinity College,

Cambridge.

Second Master—C. U. TRIPP, Esq., B.A., Exeter College, Oxford.

Resident French Master—M. Jules Larchevêque, Bachelier de l'École d'Ingénieurs de l'Université de France, Dr. Ph. de la Faculté de Kolpock.

And other qualified Resident Masters.

For particulars, apply to REV. T. F. FENN, Trent College, near Nottingham.

The Next Quarter begins October 1.

CLIFTON.—A French Gentleman of considerable experience in EDUCATION receives THREE PUPILS to attend either of the Public or Private Colleges, or Schools in Clifton, or for Private Instruction. Careful selection of prospective pupils, and constant correspondence in French. Address Monsieur Mr. Bingham, Stationer, Triangle, Bristol.

BLACKHEATH PROPRIETARY SCHOOL.

President—Rev. JOSEPH FENN.

Vice-President—Major-General G. J. JAMESON.

Principal—The Rev. J. KEMPTHORNE M.A., late Fellow of Trinity College, Cambridge.

Vice-Principal and Head Master—Rev. W. H. Drew, M.A., St. John's College, Cambridge.

Head Master—LL.D., Trin. Coll. Dublin.

Assisted by 16 other Masters in Classics, Mathematics, English Literature, Modern Languages, Natural Science, Geometrical and other Drawings, &c.

Three Scholarships and one or two Exhibitions are awarded annually.

The next Term will commence on Thursday, September 17, 1868.

Pupils will be admitted on the mode of admission, terms—Housing-houses, may be obtained on application to the Principal by letter, addressed to JOHN EDWARD PANTER, Esq., Proprietor School, Blackheath, London, S.E.

HIGH CLASSICS, LOGIC, ETHICS, METAPHYSICS, POLITICAL ECONOMY.—A First

Class Man in Classics, of whose Pupils Ten have succeeded at the Three latest Competitions for India, gives PRIVATE LESSONS.

SONGS, &c., and by Correspondence. Lectures in Colleges, &c.

Answers and set Examples in Papers, &c.—Address D.C.L., Mr. Kelly, Gray's Inn Gate, W.C.

EDUCATION, BRIGHTON.—There will be

VACANCIES at the ensuing Term, commencing September the 7th, in a long-established first-class LADIES' SCHOOL, of twenty-five residents. Resident French Teacher, German governess, Professor in attendance, &c. Dr. Paris, Mr. Booty, Madame Adelaide, Signor Meccate, Signor Venosta, Mr. Barclay Phillips, &c. Terms from Sixty to Seventy Guineas.—Address the Principals, 17 and 18, Powis-square, Brighton.

TECHNICAL and SCIENTIFIC EDUCATION.—ALEXANDRA PARK COLLEGE, Hornsey, the Rectory.—Practical Instruction in the English Language and Literature, French and German Conversation every day. Workshops for Mechanical Instruction. Chemical Laboratory. Courses of Scientific Lectures. Office for keeping Accounts and preparation for Business. Plunge Bath, Drills, and Gymnastics. Terms, 40 to 50 Guineas per annum.—Principal, Mr. C. P. NEWCOMBE.

CLAPHAM GRAMMAR SCHOOL, London, Head Master—Rev. ALFRED WRIGHT, M.A., F.R.A.S., &c., former Professor of Mathematics in the R.I.M.C. Addiscombe, special department for Pupils preparing for the Civil and Military Services. Sciences, Experimental and Natural, Literature. French and German Conversation every day. Workshops for Mechanical Instruction. Chemical Laboratory. Courses of Scientific Lectures. Office for keeping Accounts and preparation for Business. Plunge Bath, Drills, and Gymnastics. Terms, 40 to 50 Guineas per annum.—Principal, Mr. C. P. NEWCOMBE.

HOME in the beautiful VALE of LLANGOLLEN

OFFERED to a LADY or GENTLEMAN seeking retirement.

Large house, situated in a quiet, rural, and beautiful part of the Vale of the Dee, and one mile from a railway station.

Excellent fishing.

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GRAPHY.—Photography taught in Class, at 7s-6d; or

Private Instruction given, personally or by post, for 1s-6d, the

Perfect Course of Lessons.

London, 20, Paternoster-row, E.C.

ANTHROPOLOGICAL SOCIETY of LONDON.—A SCIENTIFIC meeting place in Finsbury-square. A SPECIAL GENERAL MEETING of the Fellows of the above Society will be held, at their Rooms, on WEDNESDAY, the 2nd of September next, at 4 o'clock P.M., for the purpose of considering and determining upon a Resolution, carried unanimously by the Council, concerning the Expulsion from the Society of Mr. HYDE CLARKE, for conducting a Lecture in the presence of the Society.

By order, J. FRED. COLLINGWOOD, Secretary.

BRITISH MUSEUM.

THE BRITISH MUSEUM will be CLOSED on the 1st, and RE-OPENED on the 8th of SEPTEMBER, 1868. No Visitor can be admitted from the 1st to the 7th of September, inclusive.

J. WINTER JONES, Principal Librarian.

British Museum, August 27, 1868.

MISS GLYN (Mrs. E. S. DALLAS) is now arranging for her SHAKESPEAREAN READINGS in and out of London.—Address to her at 6, Hanover-square, London, W.

MRS. E. S. DALLAS (Miss GLYN) announces that she intends to devote her leisure from Public Engagements to PRIVATE and CLASS TEACHING of READING and ELOCUTION at her residence, 6, HANOVER-SQUARE, London. Mrs. Dallas begins her School Teaching on the 29th September.

A GENTLEMAN wishes an ENGAGEMENT to WRITE an WEEKLY LONDON ARTICLE for a Country Journal. His experience will qualify him for unusual opportunities for obtaining correct information as to current events. References to Members of Parliament and others.—Address J. H. H., Bolton's Library, Knightbridge, S.W.

A BARRISTER, of Literary Capabilities, desires an ENGAGEMENT as SUB-EDITOR, or EDITOR, of a Weekly Paper or Magazine. Remuneration required small.—Address J. J. G., Strand Post-office, W.C.

WANTED an EXPERIENCED READING BOY, or an Educated Youth, above Sixteen, as JUNIOR READER.—4, Tooke's-court, Curzon-street, Chancery-lane, E.C.

PRESS.—An experienced LEADER WRITER has leisure to furnish ARTICLES, or a LONDON LETTER to a Liberal Journal, or a Political Article to a Magazine or Review. First-class Birmingham and Liverpool references.—T. F. 54, Paradise-street, Lambeth, S.E., London.

FOR IMMEDIATE SALE, on favourable TERMS, a long-established WEEKLY PROVINCIAL NEWSPAPER, "Liberator," and PRINTERS' BUSINESS. Net annual profits about 3000/-, which may soon be doubled.—Apply, by letter, to F. M., care of Mr. R. F. White, 23, Fleet-street.

A GENTLEMAN who has for ten years filled the situation of Chief and Corresponding Clerk in a large City House, is desirous of a RE-ENGAGEMENT in a similar capacity, or as SECRETARY, or in any Mercantile or Literary Employment. The highest references and testimonials will be produced.—Address F. H. C., 26, Belisha Villas, Barnsbury, N.

AN ARTIST having an extensive Practice in Ecclesiastical and other Moral Figures, Painting, also in Designing for Sculptured Groups, is willing to work with PUPILS desirous of studying these Branches of Art. None but Students tolerably versed in drawing the figure need apply.—Address H. H., Portlands, Knockholt, near Sevenoaks.

TO SECRETARIES OF LITERARY INSTITUTIONS—GERALD MASSEY will LECTURE in the WEST of ENGLAND, LATE in OCTOBER and EARLY in NOVEMBER, and in the SOUTH in DECEMBER 10th. Applications should be made at once.—Address Ward's Hurst, Hemel Hempstead, Herts.

EDUCATION.—GERMANY.—MISS DILTHEY'S ESTABLISHMENT for YOUNG LADIES, Hanau, near Frankfort-on-Main.—First-rate Education, limited number of Pupils, home comforts. References to Clergymen and Friends of former Pupils. Good references required.—Apply, by letter, to

STAMMERING, DEFECTIVE SPEECH.—Mr. A. MELVILLE BELL receives PUPILS for the CURE of all VOCAL DEFECTS and IMPEDIMENTS. The DEAF and DUMB are taught to speak. Private Lessons. ELOCUTION and VISIBLE SPEECH.—18, Harrington-square, N.W.

REV. C. W. MOFFATT, LL.D., British Chaplain, 37, Rue du Président, Brussels, will receive into his Family, from 1st of October next, a LIMITED NUMBER of PUPILS, to whose education and moral and religious training the strictest attention will be paid.—For particulars apply to the above address.

RESIDENT GOVERNESS.—A Lady, of great experience in teaching, is desirous of meeting with an educated and experienced Governess.—Being the daughter of a French Professor, she teaches French, conversational and grammatically. She is an excellent Musician, and undertakes to finish her Pupils in the subjects included in an English education. The highest references will be given.—Address P. M., care of Mr. Walton, Publisher to University College, 197, Gower-street.

A HOME in the beautiful VALE of LLANGOLLEN

OFFERED to a LADY or GENTLEMAN seeking retirement.

Large house, situated in a quiet, rural, and beautiful part of the Vale of the Dee, and one mile from a railway station.

Excellent fishing.

Address to LLANGOLLEN, care of Mr. G. Street, 30, Cornhill, E.C.

TIEN

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BASS

TIEN

**GUY'S HOSPITAL.**—The MEDICAL SESSION commences in OCTOBER. The INTRODUCTORY ADDRESS will be given by Dr. MOXON, on THURSDAY, the 1st of October, at Two o'clock.

#### MEDICAL OFFICERS.

Physicians—Owen Rees, M.D. F.R.S.; S. O. Habershon, M.D.; Wilks, M.D.; Assistant Physician—F. W. Pavy, M.D. F.R.S.; W. Moxon, M.D.; Hilton Fage, M.D.; Surgeons—Edward Cook, Esq.; John Hilton, Esq., F.R.S.; John Birckett, Esq.; Alfred Poland, Esq.; Assistant Surgeons—Cooper Forster, Esq.; T. Bryant, Esq.; Davies-Colley, M.A.; Obstetric Physician—Henry Oldham, M.D.; Assistant Obstetric Physician—J. Braxton Hicks, M.D. F.R.S.; Surgeon-Dentist—J. Salter, M.B. F.R.S.; Surgeon-Aurist—J. Hinton, Esq.; Dr. Infusorial—C. Bader, Esq.; Medical Registrar—Hilton Fage, M.D.; Surgical Registrar—Davies-Colley, M.A.

#### WINTER SESSION.—LECTURES.

Medicine—Owen Rees, M.D. F.R.S.; S. O. Habershon, M.D.; Surgery—John Hilton, Esq.; Cooper Forster, Esq.; Anatomy—Arthur E. Durham, Esq.; Physiology—F. W. Pavy, M.D. F.R.S.; Chemistry—Alfred Taylor, M.D. F.R.S.; Experimental Philosophy—T. Stevenson, M.D.; Davies-Colley, M.A.

#### DEMONSTRATIONS.

Cutaneous Diseases—Hilton Fage, M.D.; Anatomy—J. Bankart, Esq.; P. H. Pye-Smith, M.D.; John J. Phillips, M.D.; H. G. Howe, Esq.; Morbid Anatomy—Walter Moxon, M.D.; Microscope—H. G. Howe, Esq.

#### SUMMER SESSION.—LECTURES.

Medical Jurisprudence—Alfred Taylor, M.D., F.R.S.; Materia Medica—S. O. Habershon, M.D.; Midwifery—J. Braxton Hicks, M.D. F.R.S.; Operative Surgery—F. W. Pavy, Esq., and C. Bader, Esq.; Pathology—Walter Moxon, M.D.; Comparative Anatomy—P. H. Pye-Smith, M.D.; Use of the Microscope—H. G. Howe, Esq.; Botany—C. Johnson, Esq.

#### DEMONSTRATIONS.

Practical Chemistry—T. Stevenson, M.D.; Manipulative and Operative Surgery—T. Bryant, Esq.

The Hospital contains 600 beds. Special Clinical Instruction is given by the Physicians in wards set apart for the most interesting cases.

Clinical Lectures—Medicine, Surgery, and Midwifery—Weekly. Lying-in Charity—Number of Cases attended annually about 1,600.

Diseases of Women—26 beds. Ophthalmic cases—90 beds. Museums of Anatomy, Pathology, and Comparative Anatomy—Corporation, W. Moxon, M.D.—contains 10,000 specimens, 4,000 drawings, and a series of anatomical Models.

Gentlemen desirous of becoming Students must give satisfactory testimony as to their education and conduct. Fee—40/- for the first year, 40/- for the second, and 10/- for every succeeding year of attendance; or 10/- in one payment entitles a Student to a permanent ticket.

Dressers, Clinical Clerks, Ward Clerks, Obstetric Residents, and Dressers in the Eye Wards, are selected from the Students according to merit. There are two Resident House-Surgeons, each of whom holds four months; two as Junior, and two as Senior. The Resident House-Physician is appointed for six months.

Six Scholarships, varying in value from 25/- to 40/- each, are awarded at the close of each Summer Session for general proficiency.

Gold Medals are given by the Treasurer—one for Medicine, and one for Surgery.

A Voluntary Examination takes place at Entrance, in Elementary Classics and Mathematics. The three first Candidates receive respectively 25/-, 20/-, and 15/-.

Most of the Lecturers have vacancies for Resident Private Pupils.

For further information apply to Mr. STOCKER.

Guy's Hospital, August 1st, 1868.

**THE REV. ALEX. J. D'ORSEY, B.D.,** of Corpus Christi College, English Lecturer at Cambridge, and Lecturer in Public Reading at King's College, London, will receive PUPILS on the 15th of September, at his House, for the following Subjects:

Critical Study of the English Language.

History of English Literature.

English Composition.

Elocution.

History and Geography.

Fictional Specimens.

Lectures to Ladies and Gentlemen—Mondays, Wednesdays and Fridays, 4—5 p.m.

Ladies' Classes—Tuesdays and Fridays.

Gentlemen's Classes—Mondays and Thursdays.

Evening Classes for Gentlemen.

13, Prince's-square, Kensington Gardens, W.

**A GERMAN LADY,** living with her Mother at KARLSRUHE, the capital of the Grand Duchy of Baden, receives PUPILS, not more than Six in number. The terms are Fifty Guineas per annum. A thoroughly good Education is given, including German, French, the Elements of the Italian Language, dancing, and singing. A small charge is made for Music. First-rate Masters can also be engaged. The Lady has the highest recommendations from the Nobleman's family with whom she lately lived in England as Governess, and from the Parents of her Pupils, whose names will be given on application. Letters may be addressed to FRÄULEIN LOEP, Karlsruhe, Grand Duchy of Baden, or to O. W. FARRER, Esq., Moreton, Dorchester.

**BEDFORD COLLEGE,** 48 and 49, Bedford-square.—The SESSION, 1868-9, will begin on THURSDAY, October 15th. Prospectuses may be had at the College.

JANE MARTINEAU, Hon. Sec.

**EDUCATION, LONDON, W.**—The LATE PRINCIPAL (Married) of a Public School in connexion with the London University, residing in one of the best parts between Cavendish-square and Regent's Park, RECEIVES a limited number of BOARDERS and PUPILS to prepare for the Public Schools, the Universities, the Military and Civil Service Examinations, &c. Terms and references on application.—Address A. R. Hatchett & Co. Fleetwood.

**GEOLGY.**—Single Specimens and Collections of Fossils from the Chalk, the Lower Coal, and other Strata, together with Antiquities from the neighbourhood of Weymouth of the Brito Romish, and other periods, may be obtained of R. T. SMITH, Weymouth.

#### HIGH SCHOOL OF EDINBURGH. SESSION 1868-69.

The LOUD PROVOST, MAGISTRATES, and COUNCIL of the CITY OF EDINBURGH.

#### MASTERS. CLASSICS.

James Donaldson, LL.D. Rector, 8, Mayfield-street. John Carmichael, M.A. Edin., F.S.A. Scot., 4, Mary-place. William Macdonald, M.A. Edin., Chalmers-crescent, Grange. Peter Peterson, M.A. Edin. (First Class Honours in Classics, Latin). John Macmillan, M.A. Edin., F.S.A. Scot., Examiner, 16, Buccleuch-place. First English Master—John Ross, 30, Great King-English street. Second English Master—Fred. B. Calvert, Jun. French—Albert H. Schneider, Assistant. German—Albert Von Ravenberg, 74, George-street. Mathematics and Arithmetic—David Dunn, 44, Great King-street, and Assistants. Writing and Book-keeping—William Cooper, 17, York-place.

#### LECTURERS ON SCIENCE.

Chemistry—Dr. Stevenson Macdonald, 25, Brighton-place, Portobello. Natural Philosophy—William Lees, M.A. Edin., 5, Meadow-place. Zoology—James Davies.

Botany—John Sadler, F.R.P.S., Assistant to the Professor of Botany in the University of Edinburgh. Fortnightly Lectures on Mechanical Engineering—Lieutenant John Mackie, Forfar, 65, York-street. Drawing—Walter Ferguson, F.S.A. Scot., 70, Gilmore-place. Fencing and Gymnastics—Captain Roland, 7, Bellevue-terrace. Hindostani—John Thomson, P.H.

#### EXAMINERS.

Professors Kelland, Blackie, Seller, and Masson. Janitor and Drill Sergeant—William Rollo.

The HIGH SCHOOL will RE-ASSEMBLE on THURSDAY, the 1st of October, when the Classes will be opened for the ensuing Session.—

The First or Rudimentary Class by Mr. Macdonald. The Second Class by Mr. Carmichael. The Third Class by Mr. Macdonald. The Fourth Class by Mr. Carmichael. The Fifth and Sixth Classes by Dr. Donaldson. The Fifth in Greek by Mr. Macdonald. The English and other Classes by their respective Masters.

The High School system, as now amended, is as follows:—

1. The Curriculum extends over six years.

A Class, when formed, is taught by the same Classical Master throughout the term, and is transferred to another year by another Master, but during the Fifteenth year of the Course the Greek Division of the Class remains under the Tuition of its original Master.

2. Classec maintain that prominent place which their great importance demands.

3. There is a distinct department, under the charge of two Masters, who carry out a systematic course of training in all the Classes.

4. In the Department of Modern Languages the great aim of the Masters is to impress on the Pupils the value of their knowledge in Translation, Reading, Composition and Correspondence.

5. Mathematics and Arithmetic are assigned to one Master, with Assistants, in order that each subject may receive the undivided attention of its proper Teacher, and that more ample opportunities may be afforded for the study of the several branches of Applied Mathematics.

6. A Course of History and Natural History is attended by the Junior Pupils, and of Natural Philosophy, Chemistry, and Physiology by the Senior Classes.

Quarterly Examinations by written papers have been organised, and are conducted regularly in all the subjects.

In consequence of these arrangements, and of the additions lately made to the Staff of Teachers, the High School is now able to furnish systematic instruction in all those branches of knowledge which constitute a Course of Liberal Education, preparing alike for the English, Scottish, and Irish Universities; for the Military, Naval and Medical (preliminary) Examinations; for the Civil Service, and other Civil Service competitions; and for commercial pursuits.

In distributing the time allotted to the various departments, care has been taken that while the efficiency of the School as a classical seminary of the highest order is fully secured, every facility is given for the study of the other subjects included in the course.

Precursors, containing full details as to System, Books, Fees, &c., may be had on application to the Rector, or any of the Masters; to the Janitor at the School; to the City Chamberlain, City Chambers; or to the principal Clerks of Education.

Attendance may be had at the High School on Monday the 28th, Tuesday the 29th, and Wednesday the 30th of September, from 12 till 3 o'clock, for the purpose of Enrolling Pupils.

BOARDERS are received by Dr. Donaldson, Mr. Carmichael, Mr. Macdonald, Mr. Dunn, and Mr. Macmillan.

City Chambers, Edinburgh, 6th August, 1868.

**DEBENTURES at 5, 5½, and 6 per Cent.—CEYLON COMPANY, LIMITED.**

Subscribed Capital, £750,000.

Directors:

LAWFORD ACLAND, Esq., Chairman.

Major-General Henry Pelham Burn, Bart.

George Gordon, Esq.

P. F. Robertson, Esq. M.P.

Manager—G. J. BRADINGTON.

The Directors are prepared to issue Debentures on the following terms, viz.:—For one year, at 5 per cent.; for three years, at 5; and for six years and upwards, at 6 per cent. per annum.

Applications for particulars to be made at the Office of the Company, Palmerston-buildings, Old Broad-street, London.

By order, R. A. CAMERON, Secretary.

COLONIAL INVESTMENTS.

**THE CEYLON COMPANY, LIMITED.** are prepared to effect Investments on Mortgage, in Ceylon and Mauritius, with or without their guarantee, as may be desired.

For further particulars application to be made at the Office of the Company, Palmerston-buildings, Old Broad-street, London. By order, R. A. CAMERON, Secretary.

**SMALL LOCOMOTIVE for SALE.—Brass MODEL of a BROAD-GAUGE LOCOMOTIVE, 3½-inch Cylinders, 2 feet long, fitted with Valve, Tap, Whistle, Reversing Gear, &c. in Case.—Apply to Mr. J. C. STEVENS, 23, King-street, Covent-garden.**

COLONIAL INVESTMENTS.

**RHODES'S PATENT and other TENTS, &c., without Centre Pole. Portable and inexpensive.**

Estimates free, on application to

S. W. SILVER & CO., MANUFACTURERS and CONTRACTORS,

2, 3 and 4, Bishopsgate Within, and 66 and 67, Cornhill, London, E.C.

Flags of all Nations.

#### NATIONAL ASSOCIATION FOR THE PROMOTION OF SOCIAL SCIENCE.

The TWELFTH ANNUAL MEETING will be held in BIRMINGHAM, from the 30th of September to the 7th of October, 1868.

President—The Right Hon. EARL OF CARNARVON.

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LONDON, SATURDAY, AUGUST 29, 1868.

## LITERATURE

*A Narrative of Captivity in Abyssinia; with some Account of the late Emperor Theodore, his Country, and People.* By Henry Blanc, M.D. (Smith, Elder & Co.)

This work, though grounded on 'The Story of the Captives,' by the same author, reviewed in our columns a few months ago, is substantially a new book. It is not entirely re-written, but is an extension of the former work; and it contains, besides, the Story of the Captives during the most eventful portion of their imprisonment, from August 31st, 1867, to their final liberation on April 12th, 1868.

On the former occasion we had reason to complain that, in a work professing on its title-page to be "A Narrative of the Events of Mr. Rassam's Mission," not a word should have been said respecting those events, except a description of the formal reception of the mission on January 25, 1866, which we reproduced *in extenso*, and which we perceive is repeated almost verbatim in the present work. But this was not the author's fault, as that work was merely a reprint of an article which had appeared in an Indian newspaper. In the present work, Dr. Blanc, though still reserved on some important points which require clearing up, is painfully explicit on others,—making revelations which we should be glad to learn were not true.

After a brief and imperfect summary of anterior events, Dr. Blanc states that, in the autumn of 1863, the Europeans in Abyssinia numbered about twenty-five, consisting of Consul Cameron and his servants, the members of the Basle Mission and the Scottish Mission, the missionaries of the London Society for the Conversion of the Jews, and some adventurers.

The Basle Mission was founded by Dr. Krapf, in 1855, at the instance of Bishop Gobat, of Jerusalem. The primary object of its members, who were all laymen, was to work at their trades for the Emperor, but they were at the same time to spread the gospel by precept and example. They resided at Giffal, near Debra Tabor, where they built themselves semi-European houses, established workshops, &c.; and a large number of intelligent natives having been apprenticed to them, they, with their assistance, executed some really remarkable works.

The two other missions were solely for the conversion of the Falashas, or native Israelites. Their members resided together at Djenda, near Gondar,—Mr. Flad and Mr. Rosenthal having with them their wives and young families. The Rev. H. Stern, the chief of the London Mission, of whom the author speaks in very high terms, first arrived in Abyssinia in 1860, when he was well received. On his return to Europe he published his well-known book, in which, though speaking very favourably of Theodore, he "gave some details of the Emperor's family, which were to a certain extent the cause—but certainly not the original cause—of many of the sufferings he had afterwards to undergo." About that time several articles appeared in an Egyptian newspaper "reflecting rather severely on the marriages of the Guffat people." Their authorship was imputed to Mr. Stern, which he always denied; though the Guffat people would not accept his denial: to the very last they believed him to have written the obnoxious articles, and harboured bitter feelings against him in consequence."

Mr. Stern returned to Abyssinia in the beginning of 1863; and as soon as the Guffat

people heard of his arrival at Massowah, they "went in a body to the Emperor, and begged him not to allow Mr. Stern to enter Abyssinia." His Majesty gave an evasive answer, but did not comply with the request.

The author concludes his summary of events in these words:—"This was the state of the different parties, when the storm at last burst on the head of the unfortunate Mr. Stern:—Bell and Plowden, the only Europeans who might have had some influence for good over the mind of the Emperor, were dead. The Guffat people worked for the King, were frequently near his person, and entertained anything but kindly feelings towards Mr. Stern and the Djenda Mission; while Captain Cameron and his party were *watched* in Gondar, and in no way mixed up with the differences that unfortunately divided the other Europeans."

But why was Cameron "watched"? This the author does not tell us; though he does say that when Cameron went to the Christian frontier province of Bogos he was accompanied by Samuel, the Emperor's steward; and that having found the latter "intriguing with the chiefs of the neighbourhood, tributaries of Turkey, in favour of his imperial master," he thought it "advisable, in order to avoid future difficulties with the Egyptian government, to leave Samuel behind." This Samuel resented, and wrote to his master unfavourably about Cameron. And we are left to infer that this is why Consul Cameron was "watched." But the Blue Books laid before Parliament tell a very different story. From them we learn Theodore's cause of complaint against Cameron in his own words:—"I asked him to make me a friend of the Queen when he was sent on this mission; he went and stayed some time with the Turks, and returned to me. I spoke to him about the letter I sent through him to the Queen. He said that up to that time he had not received any intelligence concerning it. 'What have I done,' said I, 'that they should hate me and treat me with animosity? By the power of my Lord, the Creator, I kept silence.'

Why Consul Cameron "went and stayed some time with the Turks" it is not our business to inquire.

The date of Cameron's thus falling into disgrace was July or August 1863, two or three months before the accidental meeting of Mr. Stern with the Emperor on the 13th of October, with which Dr. Blanc commences his narrative. At first Theodore had "kept silence," being no doubt afraid to treat our Consul with any personal indignity; but he gladly availed himself of an opportunity of venting his anger on Stern, against whom personally he had, at that early period, no real ground of complaint.

We need not go over the story of the treatment which that unfortunate missionary and the other captives experienced from their gaoler, or of the steps taken for their liberation. But there is one incident connected with the latter which is deserving of notice.

In February, 1865, a Copt, named Abdul Melak, pretended to have come with a friendly message from the Abuna, or Coptic Bishop of Abyssinia, to Her Britannic Majesty's Consul General in Egypt, and gave such wonderful details that he completely imposed upon the Court at Jiddah and the Consul General, by the latter of whom he was sent back with a letter, and "suitable presents." Among these, the author tells us, was an amber mouthpiece for a pipe; and he remarks—

"Had those gentlemen possessed the slightest knowledge of Abyssinia, they would at once have discovered the deception.... In Abyssinia tobacco

is considered 'unclean' by the priests; none ever smoke; and even admitting that in his privacy the Abuna might now and then have indulged in a weed, he would have taken great care to keep the matter as quiet as possible. Therefore, to present him with an *amber mouthpiece* would have been a gratuitous insult to a man who was supposed to have rendered an important service."

But Dr. Blanc has left out the most amusing part of the story. It was not a mere amber mouthpiece that the unconscionable Copt obtained from the too credulous English official. In addition to several articles of value, he chose *two* amber mouthpieces, together with thirty pipe-bowls, twelve extra wooden pipes for the mouthpieces, two jasmine pipes, and six wires for cleaning the same, and last, not least, one bale of "Latakia tobacco, packed in canvas," altogether enough to set a smoker up for his life! The end of the affair was, that the man started and lived for months amongst the Arab tribes between Kassala and Metemna, smoking the Consul General's tobacco, and enjoying himself, "on the strength of a certificate, which described him as an ambassador, and recommended him to the protection of the tribes that lay on his road." Mr. Rassam's party fell in with the fellow not far from Kassala; he acknowledged the deceit he had practised, and was delighted when he heard they had no intention of requesting the Turkish authorities to make him a prisoner.

After the captives had been brought from Magdala and delivered over to Mr. Rassam, they were, by the Emperor's order, tried before that gentleman in his tent, on the 15th of March, 1866, when certain charges were publicly read to them, and they were called on to declare whether they or the Emperor was in the wrong. In the report of this trial, made by Mr. Rassam to Col. Merewether on the 22nd of March, he says, "All the released prisoners confessed that they had done wrong, and begged his Majesty to forgive them as a fellow Christian." Mr. Rassam made at the time no comment on this confession; but Dr. Blanc now remarks:—"It would have been absurd for them not to have acknowledged their faults and begged for pardon.... In acknowledging that they were wrong they acted wisely; it was what we counselled, nay, commanded." It is inconceivable that Her Majesty's Envoy should have allowed his unfortunate companions in captivity, as they unhappily became soon afterwards, to remain during upwards of two years under the stigma of guilt on their own confession, when that confession had been "counselled, nay, commanded," by himself.

On the cover of Dr. Blanc's book is a representation of the leg-chains, weighing about seven pounds, which he wore for a year and three-quarters. The way in which these were fixed is thus described:

"I was made to sit down on the ground, tuck up my trowsers, and place my right leg on a large stone that had been brought for the purpose. One of the rings was then placed on my leg, a couple of inches above the right ankle, and down came, upon the thick cold iron, a huge sledge hammer; every stroke vibrated through the whole limb; and when the hammer fell not quite straight, it pressed the iron ring against the bone, causing most acute pain. It took about ten minutes to fix on properly the first ring: it was beaten down until a finger could just be introduced between the ring and the flesh, and then the two pieces, where they overlapped one another, were hammered down until they perfectly joined. The operation was then performed on the left leg. I was always afraid of the blacksmith missing the iron, and smashing my leg to pieces. All at once I felt as if the limb was being torn asunder: the ring had broken just when the operation was nearly completed. For the second

time I had to submit to the hammering process, and this time the fetter was riveted to the entire satisfaction of the smith and chief."

The operation of taking off the fetters was nearly, if not quite, as bad. And when at length they had been removed, the author says—

"At first we could scarcely walk. Our legs seemed to us as light as feathers; we could not guide them, and we staggered about, very much like drunken men. If we met with a small stone in our way, we involuntarily lifted up the foot to a ridiculous height. For days the limb was painful, and the slightest exertion was followed by great fatigue."

It has always been a matter of wonderment that Theodore should not have taken any steps to hinder the approach on Magdala of the British army. There are many places on the road where considerable difficulty might have been occasioned by the opposition of a mere handful of determined men,—and Magdala has proved that there are brave men in Abyssinia. The reason of his seeming indifference is shown by Dr. Blanc, who at the same time retells a tale to which we should hesitate to give credence were it not so circumstantially related by one who was on the spot.

There is now no doubt that, though the Emperor had not received any official communication from either the British Government or the Commander-in-Chief of the invading army, he had long been aware, through his spies, of the landing of the English troops, and of their advance upon Magdala, at the same time that he was engaged in conveying his heavy artillery to that fortress from Guffat. It was not till the 2nd of April, 1868, that he at length succeeded in bringing the whole to Islamigie, including the big mortar, "Sevastopol," weighing 16,000 pounds; and after Mr. Rassam and his companions had offered him their congratulations on the occasion, they "remained with him several hours in quiet and friendly talk." Among other things, he asked about our troops, the elephants, the rifles, &c.—

"Mr. Rassam told him everything we knew: that about 12,000 troops had landed, but that not more than 5,000 or 6,000 would advance on Magdala, adding, 'It will only be friendship.' Theodore said—'God only knows. Before, when the French came into my country at the time of that robber, Agan Negussie, I made a quick march to seize them, but they had run away. Do you believe that I should not have gone to meet your people, and asked them what they came into my country for? But how can I? You have seen to-day my army, and'—pointing to the Amba above—'there is all my country. But I will wait for them here, and then let God's will be done.'"

Later in the day the Emperor sent for Mr. Waldmeier, the chief of the Guffat people, and Samuel. He talked to them in a very excited way, having already been drinking, and inquired "why he had not received any intimation of the landing of our troops, and if it was not customary for a King to inform another that he was invading his country." And on the following morning, Dr. Blanc goes on to say,—

"As Theodore had on several occasions expressed his astonishment at not receiving any communication from the Commander-in-Chief, we thought it advisable to request Sir Robert Napier, through our friends, to send a short courteous letter to the Emperor, informing him of the object of the expedition; as the letter he had addressed to him before landing had been detained by Mr. Rassam, and the ultimatum sent by Lord Stanley, previous to the intervention of an armed force, having also fallen into Mr. Rassam's hands instead of reaching the Emperor, had been destroyed by that gentleman."

It is not stated by the author whether this decision was at once acted on; but at all events it is certain that on April 3rd, when the British army had been several months within

the dominions of the ill-fated monarch, and only ten days before his own self-destruction, he had never received any declaration of war, and was unaware of the specific intentions towards himself of the British General; though, from the representations made to him, he had reason to believe "it would only be friendship."

On the morning of April the 10th, says Dr. Blanc,—

"A boy whom I [not Mr. Rassam] had some days previously sent to General Merewether, with a request that a letter should be sent to Theodore, who had on several occasions manifested great astonishment at not receiving any communication from the army, returned with a letter from his Excellency the Commander-in-Chief for the Emperor. The letter was perfect; just what we had wished for—firm, courteous. It contained no threats, no promises, except that Theodore would be honourably treated if he delivered the prisoners uninjured into his hands."

This, then, was the first communication of any kind that the Emperor of Abyssinia received from the Commander-in-Chief of the British army; and at noon of the same day the battle of Fahl was fought and won! Of this battle the captives themselves heard nothing till they were called together to hear the message from the now humbled despot:—"I thought that the people that were now coming were women: I now find that they are men. I have been conquered by the advance-guard alone. All my musketeers are dead. Reconcile me with your people." Mr. Rassam sent him back word that "he had come to his country to make peace; and now, as well as formerly, he only wished to see that happy result obtained;" and he proposed that messengers should be sent to the British camp to make terms.

It was not till four o'clock on the following morning that Theodore sent to call Flad and Waldmeier, that he might consult them. They recommended peace, and that he should accept Mr. Rassam's proposal. Theodore remained a few minutes silent, his head between his hands, apparently in deep thought, and then said, "Well, go back to Magdala, and tell Mr. Rassam that I trust in his friendship to reconcile me with his people. *I will do what he thinks best.*"

Lieut. Prideaux, and Mr. Flad, accompanied by Dedjatch Alamé, were accordingly despatched to the British camp, and the following message was given to them: "I had thought before this that I was a strong man, but I now find that they are stronger: now reconcile me." Sir Robert Napier returned a written answer, to the same effect as his previous letter. This answer Theodore would not receive, but sent it back with a mad, incoherent letter, which Sir Robert Napier in his turn would not notice, except by repeating orally what he had already said in writing. But before this message could be delivered Theodore had called a Council of his principal chiefs and some of the European workmen; when he soon became so excited, so mad, that he was with difficulty prevented from committing suicide. The chiefs remonstrated with him for his weakness, and proposed that the captives should all be made away with. But the unhappy monarch, in spite of his madness, "took no notice of these suggestions, dismissed his chiefs, and told the workmen to get ready to accompany the captives to the English camp, sending to the latter this message, "Go at once to your people: you will send for your property to-morrow."

On the receipt of this command the general impression was that they were being sent not to the English camp, but to certain death, and their departure was delayed as much as possible, in order that Theodore might have time

to cool and change his mind. To gain time, a message was even sent to him, soliciting the favour of a last interview, as they could not depart without wishing him good-bye. He "would only see his beloved friend Rassam," who accordingly went to him alone. What took place between them is thus related by the author:—

"Mr. Rassam told me that Theodore had said to him 'It is getting dark; it is perhaps better if you remained here until to-morrow.' Mr. Rassam said, 'Just as your Majesty likes.' Theodore then said, 'Never mind; go.' He shook hands with Mr. Rassam, both crying at the idea of parting, and Mr. Rassam promising to return early the next morning."

Dr. Blanc does not state whether or not they did kiss, as is the practice in such cases in Abyssinia and elsewhere. At all events, Mr. Rassam did not keep his appointment the next morning, and so Theodore never saw his "friend" again.

After Mr. Rassam had quitted the Emperor, but before he rejoined his party, Dr. Blanc was walking in front of the others, when, at a sudden turn of the road, he found himself face to face with Theodore, behind whom were about twenty men in a line, all armed with muskets. The author says—

"He could not have seen me at first, as his face was half-turned; he whispered something to the soldier nearest to him, and stretched out his hand to take the man's musket. I was quite prepared for the worst, and at the moment had no doubt in my mind that our last hour was come. Theodore, his hand still on the musket, turned round; he then perceived me, looked at me for a second or two, dropped his head, and in a low and voice asked me how I was, and bade me good-bye. The chief, on the following day, told me that at the time Theodore was undecided as to whether he would kill us all or not; only allowing Mr. Rassam to go, on account of his personal friendship for him; and that we owed our lives to the mere accident that his eye fell first upon me, against whom he had no animosity."

On the morning of April 12th, the day after the deliverance of the captives, Theodore sent a letter of apology to Sir Robert Napier, expressing his regret for his impudent missive of the day before, and at the same time he requested the Commander-in-Chief to accept a present of 1,000 cows; this, according to Abyssinian custom, implying a peace-offering, which, once accepted, removed all apprehension of hostilities." At this time, several of the Europeans, but no British subjects, were still in Theodore's power; and Samuel, who was one of those who had accompanied Mr. Rassam and his party on the previous evening, was instructed to demand that the whole of these persons should be allowed to depart at once.

"Before starting, Samuel was told by Mr. Rassam that the Commander-in-Chief had accepted the cows: an unfortunate mistake, as it misled and deceived Theodore, but so far opportune that it probably saved the lives of the Europeans still in his power. When the Europeans, who had returned to Sclessie to bring down their families, and Samuel approached the Emperor, his first question was, 'Have the cows been accepted?' Samuel, bowing respectfully before him, said, 'The English Rassam says to you, "I have accepted your present: may God give it back to you." On that, Theodore drew a long breath, as if relieved of a deep anxiety, and told the Europeans, 'Take your families and go.' To Mr. Waldmeier he said, 'You also want to leave me; well, go. Now that I have friendship with the English, if I want ten Waldmeiers I have only to ask for them.'

It was not till the evening of the same day that Theodore learned that the cows had not been accepted, but were still outside the English pickets. He consequently "believed that he had been deceived"—which, we fear, is but too true; "and that if he fell into the hands of the English, he would either be doomed to

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chains or to a cruel death"—which is not true, because the British General had promised him "honourable treatment" if he came in and submitted.

Dr. Blanc has related what took place in a plain, straightforward, and apparently truthful manner. Mr. Rassam's version of what occurred has yet to be given. At the close of the last session of Parliament he had not made any report to Government on the subject; but Lord Malmesbury stated in the House of Lords, that he was then in process of drawing up such a report, but his papers—his Lordship knew not whether from mistake or otherwise—seemed to have gone to Aden. When that report is made public, we shall be rejoiced if it enables us to arrive at a different conclusion from that which, in the absence of contradiction, we are compelled to form from Dr. Blanc's extremely well told and interesting narrative.

*Outlines of Physiology, Human and Comparative.* By John Marshall. 2 vols. (Longmans & Co.)

UNDER the term Physiology the older writers embraced the study of the external world; but gradually in modern times this term has been employed to express the science of the functions of living bodies. It is thus applied to the study of the laws of life in both plants and animals. It does not include anatomy, nor the study of the forms and relations of organic beings, which have other names given them; and in order to avoid using these long terms it has been proposed to bring all departments of the knowledge of plants and animals under one term, Biology. At the same time, for the present we must be content with the term Physiology to express our knowledge of the functions of living beings. Although it might have been expected that a knowledge of the functions of the living body would be at once seized upon by the general public and appropriated to its particular use, it is perhaps of all the natural sciences that which is least diffused amongst the people. The science of human physiology has been developed by the researches of medical men, and scarcely a fact in the whole range of the science has been contributed from outside that remarkably well-educated body of men. And yet, perhaps, there is no science, no body of facts in which all men—every man, woman, and child that lives and breathes—are so deeply interested as in those of human physiology. Why it is so neglected in our schools, in our colleges, everywhere outside the medical profession, is somewhat difficult to understand. There is no product of life without life, and the way to maintain this integrity is taught by the science of physiology.

"Preventive diseases" are now the common topics of newspaper gossip. The annual deaths of England are about 300,000. Of this at least a fourth is made up of preventive diseases. What does this really mean? Why, if that word *preventible* is not sheer cant, got up by such men as Chadwick, Farr, Rumsey, and others to frighten people, it means that seventy thousand people die every year in England from ignorance of the laws of life. This, then, is the case made for physiology as an elementary branch of education. Every one wishes to have good health and to live as long as possible: yet the very knowledge by which life and health are secured is ignored in every system of general education in the kingdom. The prophet in our day might exclaim as of old, "My people perish, and there is none to consider." It is true that in order to meet the pressing necessity of doing something, whilst disease and death are staring us in the face, we have organized Sanitary Associations and appointed

Medical Officers of Health, and passed special laws to meet special emergencies; yet all these fail to enlighten the ignorance of the people. The disease gone, the fear of death removed, the people lapse again into their old habits for want of any knowledge or conviction of the cause of disease and death. Nor does this apply only to poor people. In proportion to their necessities, there is as much neglect of the laws of life amongst the rich as the poor. The small amount of light that is let into the mind by the most refined education of the present day is seen in the fact, that the most highly educated die of preventable diseases almost in the same proportion as the uneducated poor.

We do not mean to say that physiology should be introduced into schools as a means of training or as an *instrument* of education; but we say, as a source of *information* we think it ought to be introduced into every school. It may be made at least as interesting to children as geography, history, or fiction; and the foundation would thus be laid for receiving those stern lessons of the laws of life which are broken with impunity.

We have been induced to make these observations by the publication of Mr. Marshall's book on Physiology. The author is well known as Professor of Surgery in University College, London, and has been employed for many years in teaching Anatomy and Physiology. His book differs in some measure from ordinary works on physiology written for medical students by entering more largely into the subjects of anatomy, chemistry, and physics, so as to adapt it for use amongst general students. It will be a long time perhaps before any general teaching of physiology in our schools and colleges will demand that such a work as this should be placed in their hands. At the same time, its pages fairly indicate the variety and interest of the subjects connected with the science of physiology. The work opens with an account of the various organs of the human body. This is followed by a description of the tissues of which these organs are composed, and of their appearance under the microscope. Then comes a general outline of the functions of the living animal body, and its relations to the vegetable kingdom. This is followed by what may be regarded as the prime object of the work, a detailed account of the particular functions performed by each organ and series of organs in the animal body. In the discussion of the great physiological questions which arise in this part of his work, Mr. Marshall shows himself fairly abreast of the science of his day, and has displayed a large acquaintance with the writings at least of English authors on these subjects.

There is one feature in Mr. Marshall's book which we think is quite new in works on physiology, and highly to be commended as aiding greatly the studies of the general student. It is the giving detailed instructions with regard to the dissection of the lower animals. It is not to be expected—it is perhaps not desirable—that the general student should dissect human bodies; but there are many animals sufficiently high in organization to resemble man, to which no objection could apply. Thus, for an examination of the general structure of an animal Mr. Marshall gives directions for the dissection of a dog or a rabbit. With the author's aid in dissecting one of these animals no general student could fail to become possessed of a much more accurate knowledge of the nature of physiological functions than if he had not made such examination. For the purpose of becoming acquainted with the nature of the tissues a sheep's tongue is taken and directions given for its examination. In the same manner,

we may add, a knowledge of the structure of the heart may be obtained by dissecting the heart of an ox. The eye of the same creature is admirably adapted for studying the structure and functions of the human eye; and so on with many other parts of animals which may be easily enough procured.

Mr. Marshall's work is copiously illustrated with woodcuts, which are very accurate and admirably executed. Such illustrations are, no doubt, good for refreshing the memory, but we question if the beginner finds them of much use. The large coloured diagrams prepared by Mr. Marshall at the request of the Science and Art Department of the Government, when that body took an interest in scientific education some ten years ago, are better adapted for instruction than engravings from wood. Such diagrams should everywhere be placed in some room of the college or school where physiology is intended to be taught as a part of the general system of education. In conclusion, we recommend Mr. Marshall's book as one of the best treatises on physiology that has yet been published in this country for the purposes of public instruction and general education.

*Lectures on the Life, Writings, and Times of Edmund Burke.* By J. B. Robertson. (Philp.)

A good, frank, and honest disquisition on the life, character, attempts, failures, and achievements of Burke would be a work recommending itself to all readers. Mr. Robertson, professor of modern history and English literature in the "Catholic" University of Dublin, is hardly qualified for the task. We do not doubt his honesty, but we recognize in every page his prejudice. He was once a pupil of De Lamennais, and he is now an Ultramontanist. He may be taken as an advocate, his argument passing for what it is worth; but his own audience, as they sat and listened to these half-dozen lectures, must have felt that he was no judge when summing up *their* supposed view of the case. For example:—In a high-flown dedication to Cardinal Cullen, Mr. Robertson informs that gentleman that Burke "came at times, like his friend Johnson, very near to the threshold of the sanctuary of the truth, and under more favourable circumstances would, in all probability, have received the grace to enter within it." At this implied probability, we can fancy the Cardinal smiling a comment more eloquent than speech. Mr. Robertson, however, has no doubts about his own qualifications. As a "Catholic," treating this particular subject, he assumes that he derives peculiar advantages from his religion, "which sheds so bright a light on the great social and political questions." He is confident that a nation's chief strength lies not in its political but its religious institutions, of which he might cite Spain as a proof. Of England, at all events, he remarks, that if she were to suffer by revolution as France did, she could not so quickly recover strength, because she wants, among other things, "the renovating efficacy of the Catholic Sacraments"; and, moreover, because she not only has not such a pious and heroic clergy, but that she does not possess "such a vast multitude of devoted Christians in every order of the laity." The professor of history is not joking. He gravely asserts that Roman Catholics possess supernatural aids to virtue in rich abundance, but he regrets that too many of his co-religionists little appreciate them.

We are made to see how near Burke was to the sanctuary by being reminded that he held "the Catholic doctrines of ecclesiastical authority"; but after we are told that Burke sup-

ported religious toleration of the various sects of dissenters, we can hardly believe our professor is serious when he adds that, "In a Catholic country, where there is a variety of religions, the most religious Catholic statesman would . . . have precisely followed the same course as Burke." In Spain, for example? Mr. Robertson has a fixed idea that the press is altogether infidel. England, by its liberty, has been brought to such nearness to destruction that only one thing can save her, namely, "the revival of Catholic faith and Catholic feeling." Mr. Robertson *must* know, for he has discovered that the foundations of political science rest partly on Divine Revelation and on solemn judgments of the Church; and thence he seems to have had it imparted to him that the people are absolutely sons of nobody, and have no political rights, though they may lawfully enjoy the freedom of thinking and acting as they are bidden. "The people, in none of its grades, whether high or low, can possess an inherent, absolute right to political power." It is quite otherwise with the priesthood, if we understand the somewhat obscure author aright. The Church, the "immaculate spouse of Christ," was ordained to be above the control of man. The throne must not be on the altar; the altar must be on the throne; and if kings are not wise, they may learn wisdom from the Supreme Pontiff! He can teach them obedience by authority; for, says the lecturer, "the kingdom where the Holy Spirit has set up his oracle was not to be profaned by the caprice of human power." The welfare of civil society would have perished but for the Church's right to do as it pleased! The Church, in short, "narrowed the sphere of political authority, wrested from it the interpretation of the laws of eternal justice, not only introduced a new and better code of public and private rights, but set up an independent tribunal for their adjudication—a tribunal that could proclaim to kings and to subjects alike their rights and their duties." Christian states, we are told, would have had little or no freedom if they had not surrendered this to the domination of the Church! Mr. Robertson cannot think where modern civilization would have been but for the Romish clergy—"the perpetual counsellors of the Crown." Of this, and much besides that is even more extravagant, he is quite sure, because his religion affords him peculiar lights. But governments, even Roman Catholic governments, will sometimes put their clergy under wholesome restraints—the same that bind laymen. The professor looks upon such jurisdiction with "horror," but he is good enough to allow that Anglican Protestants cannot be expected to have the same intensity of disgusted feeling.

It is in this humour that Mr. Robertson lectures on Burke. The great statesman is only the peg on which the lecturer hangs a world of matter. Burke was an Irishman; his mother was a Roman Catholic; and he advocated a repeal of the penal laws under which the Romanists of that day suffered injustice from which they are now happily free. The theme was tempting, and the author has done his best with it. Occasionally he rises a little above his restraints, but it is only to be pulled lower down than before, and to dance his hornpipe in heavier fetters than ever.

*The Supping-Men of My Time*—[*Les Soupeurs de Mon Temps*, par Roger de Beauvoir.] (Paris, Faure.)

We must turn back the pages of modern French history for some five-and-thirty years to get at the goodly company that, when Dumas

and Lamartine, De Vigny and Hugo were young, held literary sway in Paris, and mocked the laughing hours in the Palais Royal. Then, the Frères Provençaux and Véry sufficed in grandeur and in art for the epicures and gilded youth of France. The fashionable men and writers who flourished in the early days of the Citizen King, and were the familiars of his scholarly sons, contrast advantageously with the sporting spendthrifts and rich painters of manners as they rise who now crowd the Bois in the season, and patronize the Provençal Brothers only when they are bent upon a carouse with actresses and dancers. Contrast the late Roger de Beauvoir with the late Duc de Caderousse, and the points in which the dissipation of Louis Philippe's day differs from that of Napoleon the Third start to the front. The governing spirits of society under the Monarchy of July were men of good family, but not rich men. Nor does it appear that they were possessed with that sordid avarice which may whet the edge of mediocre men, but only degrades genius. They were gay, laughing men,—extravagant at times, with overmuch faith in the witcheries of Al; but their dissipation was intellectual, and they rallied one another with polished epigram. As the Indian gathers the rose-attar from the surface of the stream with the blade of the sword-lily, so this youth skimmed that which was sweet in life with the delicate weapons of the true artist. They were all poor men, or nearly all, who cultivated the grape on the slopes of Parnassus in the romantic generation of 1830. Roger de Beauvoir, according to Alexandre Dumas, alone had the great misfortune of being rich—three times rich. The leader of the band, Châteaubriand, was poor. Antony Deschamps, whose verse was on all lips, hardly had enough to put between his own. His brother Émile had a little clerkship in the Ministry of Finance. M. de Genoude paid the printer's bill when Lamartine issued his *Méditations Poétiques*. Béranger was born poor, and died poor. Alfred de Musset had no silver spoon in his mouth; and George Sand was impatient to touch a few hundred francs for her *'Indiana'*. M. Dumas admits that Scribe started with 250L per annum, and died worth three million francs; but then he will not allow that the dramatist was of the goodly company of men who wreathed the hours with song, and beaded the cup with wit, and sipped all they could get that was sweet in life under the Charter of July.

Roger de Beauvoir first appeared before the public (with his *'Écolier de Cluny'*) in 1832. Three days after the publication of this romance it was on its way to the stage. M. Dumas admits no *'Écolier de Cluny'*, no *'Tour de Nesle'*. Roger was accepted among the joyous, lettered spirits; and he brought with him that *esprit gaulois* which is hardly describable in English, and which it has been said Nature cast with both hands into his cradle. He was emphatically the best of all good company. He enchanted the brilliant and indefatigable Dumas with his inexhaustible spirits and his unfathomable store of fancies. Dumas says he was "adorable at the dinner-table." Roger was a man of strong build, of masculine mind, of the sunniest temperament. He was well read; he had the instincts of an ancient race. The Jesuits, who had brought him up, had given a solid background to his sparkling surface. The joyous company, among whom his best days were passed, pelted one another with compliments neatly turned, as well as epigram. Méry, perhaps the wittiest of the society, would slip some verses under the napkin of each guest. At a dinner given by Antenor Joly, Roger found a poem by Méry with his bread. Four lines of it describe the young noble,—

Artiste, chevalier, poète,  
Il a parcouru l'univers,  
Tenant à sa main toujours prête  
Le pinceau, l'épée, ou les vers.

Roger could reply alertly. Even Méry never brought him to a dead halt. The playfulness of the confraternity was always on hand, and verse tripped from pen and pencil at any moment. Roger called on Alexandre Dumas. Dumas was out. Roger asked for pen and paper to leave a word, and, by some accident, was shown into the kitchen. The cook's account-book was lying upon the table, and he enriched it with this compliment:—

Sur ce carnet Dumas écrit  
Jour par jour tout ce qu'il dépense.  
Il n'y pourrait mettre, je pense,  
Tout ce qu'il dépense d'esprit.

Dumas presents this as the style in which "Byronian comedy" was played five-and-thirty years ago. In the midst of fêtes, of gay dinners and gayer suppers, the spendthrift Roger made pauses enough to write about eighty volumes. Roger's romance *'Chevalier de Saint-Georges'*—which he presented to his countrymen also in the form of a drama—will remain his brightest and best-known work. Romances, dramas, poems, songs, memoirs, issued from his lively brain, it would seem, as easily as the retort over the wine-cup. In the iron body there was a spirit of fire that played, during forty years, the wildest pranks. Roger de Beauvoir was one of those strong, joyous, solid men who appear to defy disease, and with whom it is impossible to associate the sick chamber. But a fall, in November, 1861, while reaching a book from an upper shelf in his apartment, Rue Richer, produced an internal rupture, and suddenly clouded all. The laughing philosopher was brought to his arm-chair, not to be wholly beaten at once, however. He must joke with the doctor who came to operate upon him. He examined the surgical instrument, and decided that he would sooner die than submit to its use upon his poor body. Dr. Favrot agreed with him. "That being decided," quoth Roger, "let us have a glass of champagne." Two bottles were drunk by the doctor and his patient. Whereupon the man of art rose and said, "Let us embrace, my dear invalid, for it is probable we shall never meet again in this world." The doctor added, that all would be probably over within twelve hours. "In any case, come tomorrow," the patient called to the retreating physician. Dr. Favrot agreed to call, as a matter of curiosity. Roger settled himself in his arm-chair, waiting for death. But sweet sleep came; his dropsical limbs were suddenly relieved, and he felt cured. On the morrow he answered the bell when the doctor rang. He invited the fourteen doctors who had attended him to dinner, and compared himself to the Republic putting fourteen armies in motion against Death.

And he turned again to gaieties and work. But Death was upon him, and his fourteen armies could not get him again out of his arm-chair. He could not lie down. A second time he fell; and now he was prostrated. Three or four days of agony, and he died, in the odour of sanctity, attended by a father of the order that had watched over his childhood.

Alexandre Dumas has called Roger de Beauvoir the gayest child of France; and he flourished when wit and wisdom graced the epicurean board, and men were children, like Méry, and spoiled, like De Musset. Summing up the career of his favourite, the great Alexandre is exquisitely vain: "Had he been poor he would have cultivated art seriously; he would have written verses like Méry's; he would have produced comedies like De Musset's; he would have been the author of romances—like mine." He suffered in his

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latter time, on his return from Spain about 1843—but it was too late. He learned too late, in sorrow, that which he might have taught in song. His "Doves and Adders" ("Colombes et Couleuvres") are echoes of his serious part, the product of sad days. He had sung of love, of Maruja, his dark idol, the pearl of Toledo, but had not been wounded by the flame. He returned from Spain, bespattered with the blood of Diego Leon, having seen the hero put to rest in Madrid, and launched his anathema on the country of the Cid, that had "one glory less, and one stain more." The man of pleasure was sobered. The light serenader who could sing of love and sleep soundly afterwards, was at last torn by a consuming passion. He took a vast hotel, and made his mistress its queen. Later, he gave up his palace, and married. Dumas describes the event in a few words. "The man least adapted to conjugal life, married the woman least fitted to be a wife. Explain this. He, a charming man; she, an adorable creature." His mother died. His health was suddenly shattered, as we have described. The gay companion is crushed into the invalid and the broken spirit, after some herculean struggles to laugh down anguish and forget that he is no longer happy. Roger rallied for brief spaces, but melancholy completely overspread him at last; and he who had shone in epigram wrote in tears. His lament over the laughter, the Périgueux pie, the black truffle and the winking Ai, of former days, we agree with M. Dumas, is profoundly sad, written in a man's fifty-third year, from his chimney-corner, and over his gruel. "Alas!" Dumas cries, "volumes might be written on the sadness of the gayest man in France!" There is sadness, too, in Roger de Beauvoir's posthumous volume.

These stories of supping-men are occasionally most painful. The history of Saint-Cricq,—the nuisance of the Théâtre Français and the Café Anglais,—is an extraordinary one; but it is difficult to laugh at a madman, especially at the madman who is a scholar. Saint-Cricq, who sugared his tea from the salt-cellar, was an accomplished linguist, and was "profoundly learned in Egyptian antiquities."

The Count de Courchamps was a supping-man worth painting. Author of "Souvenirs de la Marquise de Créquy," the friend of Brillat-Savarin, an epicure of the first order, he was a gentleman of the old school, with a biting tongue. Roger de Beauvoir said he combined the natures of a monkey, an abbé, and a cat. He frequented the Café des Frères Provençaux, then reputed to have the finest cellar in Paris. Here he had his appointed table. Bread was specially baked for him daily. He carried his own sauces in his pocket. His choice of wine was of the daintiest,—in Burgundies chiefly. When he supped, he began at ten o'clock and finished at midnight; and he went on supping and meddling with the kitchen to the end, even among the good sisters of Poitiers, who pitted him and let him die among them.

A more welcome figure, as Roger presents him, is Armand Malitourne—the perfect conversationalist, as beloved as a friend as sought after for an attractive guest, epicure or Benedictine, by no means of the habit of Étienne Béquet, who lost himself in Rabelaisian *bouts*. Malitourne appears to have possessed in a high degree all those social graces which have faded in these latter days. He was to be seen at his best at one of Bouffé's or Dr. Véron's suppers—"humorous as Stendhal, lively as Romieu, and paradoxical as Nestor Roqueplan." And where is he? This is the question Roger de Beauvoir asks, giving himself the most melancholy of answers: "I know, but I will not depress you

by telling you." The end of Béquet is as melancholy, capped with a Rabelaisian epitaph by his friend Roger. Lassailly follows, shivering, starving, with a faded white-satin cravat upon his breast, and the worn seams of his coat inked. He has not dined for two days when Roger asks him to sup. He prefers port to champagne. The good cheer drives him mad, and he declaims fantastic verses; and De Musset and the rest laugh at his long nose! He makes a few francs now and then by selling couplets to the confectioners. He is the butt of the lively company, including Balzac, with whom he sometimes works. The account which Roger gives of Lassailly—book-grubbing in the country for Balzac, and the escape of the dreamer into the fields—is the most perfect bit in the book of contemporary sketches before us. His escape from Balzac's control to Paris is the end of his adventures. Here is the *finis* of another supping-man of the romantic school: "Lassailly vegetated a few years longer, gnawing crusts, as he said, from the table of the Muses. He was almost mad when he fell sick. He disappeared completely. We saw him no more; we, who had called ourselves his *breeches purveyors*. Had he any when he died in the hospital? I doubt it. He faded away without noise, and—forgotten." The hospital appears to have been behind every supper-table!

The portrait of Briffault is the most completely Rabelaisian figure in Roger de Beauvoir's gallery; from his draught at the Corrara, in the Palais Royal, out of an immense cheese-cover full of champagne, which made men Knights of the Cup, to his drivelling upon a bench at Charenton! According to Briffault's biographer, who cuts the angles of his figures very sharp, he could write only in his shirt-sleeves, with his elbows upon a restaurant table, and with empty plates and glasses before him. He had no style, but pretended to have based himself on Sterne. He was angry all his life with Jules Janin, for no reason that his friends could discover. Roger gives a final glance at him! Champagne had become too weak for him. "A livid brow, sunken cheeks, a cadaverous head, he appeared as old at the tables where he had left so many empty bottles. His glazed eye sought departed guests—who avoided, or would not see him! Nocturnal Paris—that curious, many-sided Paris—beheld in him now only a ragged phantom, the spectre of his former gaiety." So ended another of Roger de Beauvoir's Barons of the Fork! Poor Briffault has left behind him a few *mots* for the Boulevard dining-tables, and nothing more. We give one. A certain epicure observed to him, "There should be two to eat a chicken."—"Exactly," from Briffault, "oneself, and the chicken."

Romieu, Bouffé (not the *gamin de Paris*, but the epicure who bore the proud name of Bouffé-Champagne), Carnavallo, Perpignan, Cabanon, and a host of lesser men appear at Roger's supper-tables, with here and there a witty countess and "a delicious actress"—Mlle. Cicero, for instance. The famous nights at Gosselin's are ended. No Carnavallo now wears a sky-blue felt hat bound with a rose-wreath through Paris streets for the amusement of the *gamins*. He would be a bold man, indeed, who aired his braces outside his coat, along the Champs Élysées. The end of Perpignan, and of the book, has the grim comedy about it which we find in Dumas' account of the author: and in Roger's sharply-etched portraits of supping men, whom he has traced chiefly to a madhouse. By mistake, the body of Perpignan, forgotten with the rest, we suppose, by his ancient boon companions, was conveyed to Perpignan, to be returned to Paris, like any other misdirected parcel!

The life of the "gayest man in France," and his memoirs of his table friends, give the moralist copious illustrations. "Feast won, fast lost," might stand on Roger's title-page. The romantic voluptuaries spared neither Lassailly's rags nor his nose. A friend's death was an excellent opportunity for an epigram!

#### NEW POETRY.

MUCH of this "new poetry" is prose in measured and unmeasured lines, as void of fire as of typographical regularity; as to which some of the authors, and a host with them, are hard to persuade that incomplete lines of type make sorry verses unless they are instinct with thought or coloured by imagination.

More than one of our present subjects are well known to the public; others desire to be so. We take their productions as they come. *Memnon, and other Poems*, by John Edmund Reade (Moxon), is, so far as the first work is concerned, thoroughly respectable; hard to find fault with, if any one desired to do so, which is not likely. The people of this drama are Memnon, a reformer and deliverer of old Egypt; Amasis, builder of the pyramids near Memphis; Menes, brother of the former; Lilis, daughter of the latter, &c. Memnon, retiring above the city of Memphis, makes a statue. Menes visits him, and is reviled for having taken part, by neglect, against the free, or would-be free, of their common race; he is aroused to patriotism in the swiftest manner by the objugations of his brother. Afterwards, there is a meeting of Egyptians, who grumble at the pyramids, as well they might; and one among them hints darkly at this, that and the other. All, however, is done in unexceptional verse; and the most estimably patriotic sentiments are expressed in the briefest interjectionary sentences, such as "Thou!" "How!" "The Prefect comes!" upon which last utterance, no doubt to spare their feelings, the scene changes. Then appear Memnon and Menes, with the same prefect and his guards; and Memnon favours Menes with what seems a most supererogatory description of the prefect, who "falls," being suggestively murdered by Menes, though we are not told how or why, notwithstanding that such information would be more acceptable than an account of the poor man's personal appearance. Memnon then makes a speech, declares himself the son of Moëris, and the multitude "rise tumultuously," being drawn thereto by an eloquent address. The scene then shifts to the Court of Amasis. His servants make short speeches, and he rather long ones, full of grand phrases, expressing philosophical meditations of strange sublimity. Memnon, attended by "the multitude," enters, joins in with speeches of his own, until "the multitude" shout, "Slay the tyrant!" meaning Amasis; and Lilis enters, who entreats for the life of her father, which Memnon spares, and "the multitude"—who, by the way, in the interval, have become "the people"—shout with unconscious self-landing, "The voice of Nations is the voice of Justice!" Reduced to prose, or complete lines, this is the substance of a considerable portion of this poem. The catastrophe we will not reveal, lest we deprive Mr. Reade's students of the luring point in their task. In the minor poems our weak nature takes more pleasure, is less oppressed than by the grave classical drama and its unlimited opportunities for "eloquence." In fact, they are more enjoyable. Among them the best, to our knowledge, is 'The Epicurean,' a piece which may be thoroughly enjoyed.

From the higher level of such work we turn to Dr. R. T. Evanson's commemorative poem,

which is comprised in *Nature and Art, or Reminiscences of the International Exhibition, 1862* (Hunt & Co.). The author says he was first moved to record in verse that should endure the occasion of the Great Exhibition of 1851, but the opportunity fled, and with it the inspiration which had moved his poetic powers. The later event re-awakened the desire, and again stirred the versifying fervour in his brain, so that now he has his heart's desire in eight parts of some thousands of lines in tolerable rhyme. It is undeniable that one of the chief, if not the one chief qualification for dealing with such a vast subject as this is the power of seeing the poesy that oftentimes exists in things which the gross world is apt to consider common and overlooks by the force of custom. Dr. Evanson has this qualification in abundance: thus, after leading us along the road to Kensington on the glorious 1st of May, here is a picture in rhyme of an object of no rare occurrence, but which is seldom suspected of poetry—

The staid Policeman, clad in cloth of blue,  
Conspicuously forward stands in view;  
"Beneign Tyrant," with forefinger raised,  
"All right of way," by him, at once, appraised:  
Amidst the crushing crowd unmoved he stands,  
And with his white-gloved hand the whole commands.

Our author is perfectly serious. He "does" the Domes, the Nave, the Koh-i-noor, and heaps upon heaps of things, such as—

Lo, a fresh triumph in the iron-trade!

Coventry ribbons, the Picture Galleries, with Delaroche and Piloty, Madame H. Browne, Turner, Hogarth, Gainsborough and Reynolds, besides genius in general; then the sculpture, with Mr. Woolner's "Love," which is thus pathetically described—

Statue of "Love," wrought out of stainless stone,  
In love's most fascinating form here shown:  
(Wrought by the hand whose skill can marble make  
The living likeness of our features take):  
A joyous God, that seems from mischief free,  
Yet a most truant, treacherous guide is he;  
Quick his alluring chains to fling o'er all;  
Alas! for those entangled in his thrall.

Mr. Woolner is a poet; to him we commend these verses in his honour.

The whole Exhibition is thus poetically treated, including its scientific and pathetic aspects, not forgetting Prince Albert. The general scheme of the poem and the Exhibition is thus apostrophized in reference to the powers of man—

To Man is granted intellect to bind  
The powers of Nature by the power of mind.  
Lord over every beast that roams the field,  
Not only does he make each monster yield,  
But makes the very elements take part  
In human enterprise, by human art:  
The lightning now man's messages must take;  
The sun is made man's likenesses to make.

A little book, which is ostentatiously anonymous as to its publishers, and bears on its title-page *Infelicia*, by Adah Isaacs Menken, may be next taken from the pile before us, and, by any one who does the like, found to contain verses which, if they were really written by the person whose name they bear, show much uncultivated pathos in sentiment and senseless love of nature to have existed in the author's mind; also a wilderness of rubbish and affected agonies of yearning after the unspeakable, which achieve the nonsensical. As it is, blue fire and red fire of the theatre are nearer the eternal glories than the author's rhapsodies and crudities of pseudo-imagination—we cannot say imagination unrestrained, which is vented in such nonsense as this:—

Once the blaze of a far-off edge of living Love crept up my horizon, and promised a new moon of Poesy.

A soul's full life!

A soul's full love!

And promised that my voice should ring trancing shivers  
of rapt melody down the grooves of this dumb earth;  
And promised that echoes should vibrate along the purple  
spheres of unfathomable seas, to the soundless folds  
of the clouds.

And promised that I should know the sweet sisterhood of  
the stars.

Promised that I should live with the crooked Moon in her  
eternal beauty.

But a Midnight swooped down to bridegroom the day.

And so on, to the termination of a work which, in its conception, is marked with intense beauty and grandeur. "Miserrimus" is in this strain, but dull. A torrent of ferocious force appears in the poem called "Judith"; much tender and delicate beauty of diction and thought in "Dreams of Beauty" and "In Vain." In its utter incoherency and peculiar style, "Genius" reminds us of Mr. Martin Farquhar Tupper, and of what a friend irreverently described as the "jagged prose" of that imitable bard. Poe, recovering from *delirium tremens*,—a maudlin Pythoness, over-drunk, not with the god, and still poetic, but rapt by an intrusive demon,—were no unapt antitypes of the woman whose deepest unhappiness is in the half-conscious "acting" of this book.

Thence to *Ballads and other Poems*, by the late Sir Edmund Head (Smith, Elder & Co.), is a change from chaos and contortions of the stage to scholarship, grace and order. This is the case with us on turning to his translations of Propertius, and, in a minor degree, with those which come from the Spanish and Icelandic. The original poems are less excellent. As this volume is reprinted from *Fraser's Magazine*, it will suffice thus to notice its quality and appearance.

Although the Rev. Fergus Ferguson, M.A., who writes the prefatory note to Mr. James Galbraith's *City Poems and Songs* (Glasgow, Morison), would have us do so, we are not likely to shout out with him—Another new Poet! in tones such as heralded the honours of Alexander Smith. Persons of kindly humour will enjoy the prefatory note which, unconsciously by the author, reminds one of that which the Rev. Homer Wilbur wrote to the "Papers" of Mr. Hosea Biglow, of Saalam, U.S. Those who like simple verses and homely thoughts, which are not devoid of such vulgarity as we call commonness, may read the poems in question with much pleasure.

It was not a bad notion to publish the works of three bards in one very little volume, and it is pleasant to find this idea carried out in *Trefoil*, verses by three anonymous persons, (Longmans & Co.), who altogether contribute but 112 12mo. pages, with wide margins and "well-headed" lines. The three bards are respectively distinguished by symbols. The owner of the sign \* has produced pretty and pathetic verses; among these are some which resemble, without copying, the more popular productions of Prof. Longfellow, and are quite equal to these, e.g., "Will They?" which, unlike the verses of the sentimental poet we have named, do not cloy, and are free from sentimentality: neither do they jingle. "My Murray," an apostrophe to the great Guide of Albemarle Street, is capital of its kind. The Professor has probably satisfied the demand for verse of these kinds, or here would be a good thing for the sentimental market. Verses by "E." come next, and are distinct in character from the last. The modes of thought, insight and expression of Mr. Browning have most deeply marked the mind of "E." who is, however, no copyist, and does extremely well in the address of "Beatrice Cenci to Guido," as he was painting her portrait. This poem is exceptional in style and fancy to others by the same; the latter recall Mr. Allingham, but are original enough. One of the best is "A Boat Song in the Highlands,"—a very good sort of thing for the piano, but indifferent for the ear. The want of good boating songs is noteworthy in English, the language of boaters. Thomas Moore's "Row, brothers, row," is the only approach to such a thing, and that

shows that the author knew as much about a boat as of milking a cow, or probably less. "Verses by F." conclude the little book before us, and here is the manner of Mr. Browning again at the opening, and weaker models to follow. "The Old Maid's Reverie" is very good. Altogether, these poems are such as find corners in first-class magazines, and are there forgotten because of the abundance of their kind.—"Ruth Wills" publishes, by means of Messrs. J. Nisbet & Co., some very pretty, mediocre verses, with title *Lays of Lowly Life*.—*Evening Rest*, by the Author of "Morning Light," (Mozley), consists of verses tacked on to scriptural texts: these are explanatory or suggestive, as seemed fit.

*Ten Thousand Wonderful Things: comprising whatever is Marvellous and Rare, Curious, Eccentric and Extraordinary, in all Ages and Nations.* Enriched by Hundreds of Authentic Illustrations. Edited by Edmund Fillingham King, M.A. (Routledge & Sons.)

Most ordinary mortals who have reading proclivities and keep note-books find themselves, after a year or two, the collectors of a good many literary curiosities. Such collections are capital things in their way—in fact, in a good many ways. For a dinner-table they come in charmingly; in a review article they "tell." Over an after-dinner cigar, when the mind is uncertain whether to think of nothing and drop into a doze, like a man, or to keep awake and think of some trifles or another, like a child, they are an invaluable resort. And at last, when all their other uses have been exhausted, they are very good things sometimes to make a book out of. But for this the crowning glory of the Amateur Casual's note-book, at least three very important desiderata need attention: first of all, of course, what to put in; secondly, what to leave out; and, thirdly, how to put in what is to be put in as it ought to be put in. Unluckily, Mr. King has blundered on all these three cardinal points. He has fallen very far short of his ambitious title-page; he has swelled his 684 other pages with numberless bits of "information" not worth pen and ink, and with numberless bits worse than worthless, because they are inaccurate; and he is neither an artistic nor an alluring compiler. In consequence, he must be described as an unsuccessful pupil in the school of the indefatigable Mr. Timbs. First in order, and first in importance—what ought a book of this sort to contain? Surely information of some sort, or amusement of some sort at the very least—facts, legends, traditions, superstitions, "things not generally known," or whatever it may be that deserves the reader's trouble in reading it. But what have we here? We open the volume haphazard, and light upon such printed paragraphs as this:—

"Ceiling of Whitehall.—The celebrated painting on the roof of the Banqueting House, has been restored, repainted, and refreshed, not fewer than three times. In the reign of James the Second, 1687, Parfrey Walton, a painter of still life, and the keeper of the King's pictures, was appointed to retouch this grand work of art, which had then (as appears by the Privy Council Book) been painted only sixty years. Walton was paid 212l. for its complete restoration, which sum was considered by Sir Christopher Wren 'as very modest and reasonable.' It was restored a second time by the celebrated Cipriani; and for a third time by a painter named Rigaudi."

Or, again,—

"Charity instead of Pomp.—According to the 'Annual Register' for August, 1760, there were expended at the funeral of Farmer Keld, of Whitby, in that year, 110 dozen of penny loaves, 8 large hams, 8 legs of veal, 20 stone of beef

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(14 pounds to the stone), 16 stone of mutton, 15 stone of Cheshire cheese, and 30 ankers of ale, besides what was distributed to about 1,000 poor people, who had sixpence each in money given to them."

Only one more instance under this head:—  
"The Magpie stoning a Toad."—There is a story told of a tame magpie, which was seen busily employed in a garden, gathering pebbles, and with much solemnity, and a studied air, dropping them in a hole about 18 inches deep, made to receive a post. After dropping each stone, it cried "Currack!" triumphantly, and set off for another. On examining the spot, a poor toad was found in the hole, which the magpie was stoning for his amusement."

Here are three fair specimens of at least one-third of Mr. King's book. We say one-third, because we have dissected it into three portions, leaving, of course, a fourth in the shape of a residuum of self-justification. In round numbers, then, we may say that 3,000—or, to be, perhaps, unjustifiably charitable, 2,500—of these "Ten Thousand Wonderful Things" are "things" like the above. We need hardly anticipate Mr. King's reminder that they are, indeed, "wonderful," and even more, that two of them at any rate are within the compass of things either "rare," or "curious," or both. But whether such curiosities are worth being immortalized, or whether they are worth making acquaintance with after their immortality, is quite another question. And on this point we for one beg leave very decidedly to differ from Mr. King.

But he has done worse than making this blunder number one. A book of this sort, if it pretends to any kind of use whatever, must pretend, at least, to be a trustworthy guide wherever it chooses to lead us. In more instances than we have space to enumerate, the author cannot be trusted. Again we turn over the pages, as chance may dictate. On page 41, under the heading "The Summers Magnet or Loadstone," we read that "among the great naval officers of Elizabeth's reign must be ranked Sir George Summers, the discoverer of the Bermudas, often called the Summers Islands from that circumstance." A great many of our readers will, doubtless, thank us for sending coal to Newcastle when we give them the information that in this short paragraph there have been compressed no less than three mistakes: in the first place the gentleman in question boasted the name of Somers and not Summers; the natural consequence of this is that the alias of the Bermudas is not the "Summers Islands," but the "Somers Islands"; and as a matter of fact he did not discover or pretend to have discovered them at all. An humble individual of the name of Juan Bermudas, dating from Spain, "discovered" and gave his name to the territory in question some nine years before Queen Elizabeth was born or thought of. Sir George Somers's only connexion with the Bermudas arose from the accident of his being wrecked on their shores in the reign of James the First, and being the first to find out their charms and induce his sovereign to colonize them.

We turn over a few pages, and come to "A visit to the residence of Dr. Johnson"—"one of the dreary, old-fashioned houses leading from the arched entrance to the Temple, which almost every passenger through Temple Bar must have remarked." And indubitably "every passenger through Temple Bar" who had the good or bad fortune to walk there some ten years ago—more or less—ought to have known that by turning to the right and going straight on for about fifty seconds he would see, in the first right-hand corner he came to, the "dreary, old-fashioned" home of the Great Bear. But

the dreariness and the old fashion are both gone. There is no Inner Temple Lane to be found to-day in the length and breadth of the Temple by the most penetrating country-cousin of Mr. King's acquaintance. "Dr. Johnson's Buildings," commemorates the solitary atom of truth which hides itself in the sentence we have quoted. And the "old staircase in the residence," and the big room upstairs—two of Mr. King's "authentic illustrations"—have given place to a set of as undreary and new-fashioned chambers as mortal barrister need desire. We waive the question whether the big room and the "old staircase" would recognize themselves if they could see their likenesses on the page before us. All that concerns us is to point out this one instance, out of a great many, of grossly careless inaccuracy on the author's part; and to suggest to him how much more interesting would have been the information which, with a little trouble, he would have been able to give to the world at large, namely, that ever since "No. 1, Inner Temple Lane" was the home of Dr. Johnson, its site has been honoured by a consistent run of that "good luck" which notoriously attends some sets of Temple chambers and deserts others.

We are really not dealing unrighteously with Mr. King by picking out these extracts, and giving no other side of the picture. Of course in a volume of this sort there is a good deal true, and a good deal that is sure to be new, too, to some of us. But when books multiply as they are multiplying now-a-days, and when on every conceivable subject a person need only think he has something to say to be persuaded by friends or by himself to say it in print, we must be allowed to have our say too, and it is this: if a book has nothing but negative qualities in it, it had much better have remained buried in the harmless brain of its writer; and if it abounds in faults into the bargain, he deserves all the censure he can get. The book before us has as little as it could well have to recommend it; 'The Curiosities of London,' 'The Romance of London,' Haydn's 'Dictionary of Dates,' Brand's 'Antiquities,' and a host of others have anticipated and excelled it; and it is full of trite stories, clumsily headed and clumsily told, and of a great many mistakes as glaring as the two we have instanced. Some of these, indeed, may fairly be called "marvellous and rare, curious, eccentric and extraordinary." To be told that men who lived in 1774 and 1783 were "inventors" of a diving-bell which was in common use in the sixteenth century; or that "about the date 1765 the colliery tramways underwent considerable improvement by plating the wooden rails, in many parts, with iron"—an improvement introduced at Whitehaven in 1738; and that "the Habeas Corpus Act passed in 1678";—to be told "facts" like these by an ordinary informant, in ordinary conversation, would indeed be pardonable, because very natural slips of memory; but when anybody sits down to teach, without invitation and without necessity, he ought to take ordinary care not to teach what is glaringly inaccurate. One trivial oversight is, however, the key to the whole production: "A trial [of steam locomotives] took place in October, 1829—only twenty-seven years ago!" Reflecting, then, that this sentence, at least, was penned in 1856, we have little doubt that our assumption was true—that this is the reduction into print of the accumulations of a casual note-book kept a long time ago.

After adding that, in at least nineteen cases out of twenty, no authority whatever is given for the most "marvellous" records of the volume, it is, perhaps, superfluous to remark

that for all practical purposes the work is simply useless.

#### OUR LIBRARY TABLE.

*Elementary Lessons in Astronomy.* By J. Norman Lockyer. (Macmillan & Co.)

Mr. Lockyer's previous astronomical writings have been so good that our readers will expect a favourable account of this one; and they will have it: the book is full, clear, sound, and worthy of attention, not only as a popular exposition, but as a scientific index. Mr. Lockyer is "editor of 'The Heavens'"—startling title; but not so startling as "author of 'The Heavens,'" which we saw on a title-page. We will mention a great glory of this book, and a trifling fault. The first is, "Of the theory by which various astronomers have attempted to account for sun-spots we shall, in this little book, say nothing, as recent discoveries have shown that the old ones (theories) must be reconsidered, and those lately put forward are not yet sufficiently established." The old school of popular writers would never allow that there was anything on which no explanation could be given: they took the current view, and if they changed, it was positively for the last time. And they never abandoned the old until the new was ready to step in: it was "One down, t'other come on"; in Latin, *Uno aulso, non deficit alter*; in French, *Le Roi est mort, Vive le Roi!* We have lost our Greek, and we never found our Sanscrit, or the reader should have had more. The excellent *docta ignorantia* of the work before us is very good teaching: the world would be much benefited by a large infusion of what we do not know into our science. We are not so much in love with the continuance of the practice of raising astonishment by reckoning the big heavens in our little miles. The surface of the Sun is about 2,284,000,000 square miles, and 3,097,600 square yards in each mile, and each square yard gives the heat of six tons of coal in every hour. It is enough to make a coal-merchant's mouth water to get an order from this bulky fire-king; but it gives no idea. It would be grander to use the square inch, and grander still to reckon in fleas' backs. The little error is in the description of the New Style, which works on astronomy and the calendar very often describe wrongly, seldom indeed rightly. Our book says, "The correction was made by calling the day after September 3, September 14." Our late adoption of the style gave us eleven days to skip over: it was the day after September 2 (not 3) which took the name of September 14. The Act of 1751 prescribed it in these words: "The natural day next immediately following the said second day of September shall be called, reckoned and accounted to be the fourteenth day of September, omitting for that time only the eleven intermediate nominal days of the common calendar." There! we have been to the cow for a supply, and we hope writers will vaccinate their accounts of the style accordingly. The illustrations are equal in value to the literary portion; which is saying a great deal for them in a few words. We have never seen the printing of colours so exquisitely done as in this book.

*Sciography; a Radial Projection of Shadows.* By R. Campbell Pluckett, Ph.D. (Chapman & Hall.)

Who was it that said

Shadows to-night  
Have struck more terror to the soul of Richard  
Than can the substance—?

was he learning perspective? He might have been, for shadow is very difficult compared with substance. Dr. Pluckett has produced good help on the matter, and his plates are very nicely done. That is, geometrically speaking: but their effect is sometimes diminished by the shading of the dark part of the substance being too weak compared with the shadow.

*Excelsior School Series. Arithmetic for Schools and Colleges.* By Richard Wormell, M.A. (Murby.) MANY examples and scanty explanations. No such proud name as *excelsior* is made good; but the work is as good as a great many others.

*Abel Heywood's Series of Penny Guide Books.*  
(Manchester, Heywood & Son.)

[Manchester, Maywood &c &c.]  
We have received a large number of little books under the above title. These, although got up, as might be expected from their price, in the roughest manner, are excellent in their way, and contain quite enough of the subjects to which they refer to satisfy the ordinary excursionist. The best are those which refer to such localities as Snowdon and Llangollen : the worst such as deal with antiquarian subjects, such as York; or artistic matters, such as the Leeds Fine Arts Exhibition. The former of these two is unpardonably meagre as to the Minster, the latter full of the most astounding errors. Supposing these things are compiled in Manchester a stranger would be justified in believing that grammar is costly in that town and knowledge of the meanings of words not common among its inhabitants. We never saw so many blunders in type as these publications contain. Nevertheless, they are good pennyworths.

*Little Rosy's Voyage of Discovery.* Illustrated.  
(New York, Appleton & Co.)

THIS account of the journey of two little folks into a sort of Wonderland is not badly told, but it is based on proceedings that are offensive in principle to paternal authority, for the children set out without permission; the boy in the course of travelling threatens to kill a harmless lizard, and pokes his stick into a large nest of unoffending ants. Such acts are not commendable to infants. The illustrations by Mr. L. Fröhlich are pretty, but very weak, and badly drawn in spite of their prettiness.

*Modern Industries: a Series of Reports on Industry and Manufactures as represented in the Paris Exposition of 1867.* By Twelve British Workmen. (Macmillan & Co.)

(Macmillan & Co.)  
THE Twelve authors of this pamphlet were competitors for prizes on account of reports on their respective trades, as illustrated in Paris last year. Nearly all of their productions are worth reading, and sure of bringing profit to readers who may desire to learn what relates to his particular craft. Among the best are two papers by Messrs. H. Major, of Nottingham, 'On Educational Appliances,' and P. A. Sanguinette, of Chatham, 'On Tools and Machinery.' The remarks of Mr. C. A. Hooper, of Islington, 'On Cabinet-making and the Woods employed in it,' upon the comparative prevalence of common sense in his craft in France and England, are much to our taste, and in accordance with our own knowledge, that we are inferior to our neighbours in that matter, as well as in Art.

*Charnwood Forest: its Air, its Scenery, its Natural Curiosities, Antiquities and Legends.* With a Map and other Illustrations. By F. T. Mott. (Kent & Co.)

THIS is one of the old-fashioned guide-books, written by a person who is thoroughly competent to deal with the surface of the subject, and not learned enough to bore the most superficial reader with too much of any one of its aspects. Mr. Mott evidently believes, and with very good reason, that Charnwood Forest was designed by Nature to promote the healthiness of the neighbouring townsmen, their wives, children and nursesmaids. His grounds for this conviction are so satisfactory that for their sakes we rejoice with him, and see another proof of providence in the arrangement of towns and forest in one county. One good thing in this book that is not common in its class is a list of lodgings, their capacities, &c. The trees and glens of Charnwood Forest, its fresh but not bleak air, may suit many who are on the look-out for fresh holiday ground.

*Modern Methods in Elementary Geometry.* By E. M. Reynolds, M.A. (Macmillan & Co.) *Geometrical Note-Book; containing Easy Problems in Geometrical Drawing preparatory to the Study of Geometry.* By E. E. Kitchener, M.A. (Macmillan & Co.)

EUCLID waited many centuries for a rival : Wilson has not had to wait as many weeks. We have our political schools ; are we to have our *political* school of geometry ? We need not enter into controversy on this work, which follows its predecessor in not stating its postulates. We warn our reforming geo-

meters that, when they extend Euclid, they ought to tell us whether or no they extend his words. Mr. Reynolds, having very properly called attention to the angle of more than two right angles, proceeds thus, "An obtuse angle is greater than a right angle." Does the word *obtuse* go past two right angles? Is an angle of  $2\frac{1}{2}$  right angles obtuse? We suspect this is not meant. Since acute and obtuse angles are to be associated with those non-Euclidean angles which form the remainders of the revolution, why not call these last *co-acute* and *co-obtuse*? The second work, which is by one of Mr. Wilson's colleagues at Rugby, is an idea which may be applied to either Euclid or any modern substitute. Simple constructions are demanded, with hints when necessary, and blank space is left for the drawing. We hold that the study of geometry as a science ought to be preceded by some geometrical *experiment*, such as these constructions would help to supply, and a little training in analysis of thought, not enough to be called by such a grand name as *logic*. We give an example of Mr. Kitchener's constructions — a very good one; but the answer is given wrongly: "A fly is 2 inches from the centre of a given circle 6 inches in radius; another fly is stationed half-way between the first fly and the centre of the circle; let the first fly make for any point in the circumference, and find how far he will be from the second fly when he has got half way." The answer should be half a radius, or 3 inches; it is printed half an inch.

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LIST OF NEW BOOKS

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DARWIN'S HYPOTHESIS

Dr. Joseph Dalton Hooker, President of the British Association, in his inaugural address delivered at Norwich, commented on critiques in the *Athenaeum* which it would seem he has read in haste.

In No. 2103, of date February 15, 1868, appeared a critique on Mr. Charles Darwin's two volumes on the Variation of Plants and Animals under Domestication. From this critique Dr. Hooker quotes the following words: "They contain nothing more in support of origin by selection than a re-asseveration of his guesses founded on the so-called variations of pigeons;" and these words are correctly copied: but if Dr. Hooker had read the context with more care, he would have found that they were closely followed by this sentence, quoted from Mr. Charles Darwin's own description of his work: "In one case alone—namely, in that of the domestic pigeon—I will describe fully all the chief races, their history, the amount and nature of their differences, and the

probable steps by which they have been formed." This, then, was not an "inconsiderate" statement made by the *Athenaeum*; it was a deliberate statement made by Mr. Charles Darwin.

Next, Dr. Hooker makes the *Athenaeum* say, "Mr. Darwin's theory is a thing of the past," and that "natural selection is rapidly declining in scientific favour." Now, there is not one word to this effect in the columns of the critique commented on. No term implying respect for Darwinism is used; and it is called throughout an hypothesis, or a supposition, and never a "theory." The *Athenaeum* did not misapply this word. The *Athenaeum* did not write of vogue as if it were a thing of scientific value; and whilst weighing evidence it did not count editions and translations. There are no vague generalities in the critique. Dr. Hooker makes the *Athenaeum* say that origin by selection is a thing of the past, when the truth is, that the *Athenaeum* said that Mr. Darwin had postponed the production of his facts to the indefinite future. After saying that "his first book," the volumes before us, went fully into only one case—that of the domestic pigeon; after promising "a second book" on the variability of organic beings in a state of nature, and "a third book," trying the principle of selection by seeing how it will explain the geological succession of organic beings,—Mr. Darwin says, "the principle of natural selection may be looked upon as a mere hypothesis until it explains these and other large bodies of facts." On these statements the reviewer remarked that the geologic succession of organic beings is a thing which the past generation of the students of ancient life believed they knew, and which the present generation of them are sure is not known; and that "if Mr. Darwin's supposition is to be deemed a mere hypothesis until it shall satisfactorily explain what is not known, the discussion of it is adjourned by its author *sine die*."

There is a third proof that Dr. Hooker has carelessly read the critique he quoted. In it Mr. Charles Darwin is accused of ignoring the work published by M. Flourens in refutation of his hypothesis. This work is founded upon the results of the experiments in crossing breeds, which have been continued for about a hundred years by Buffon, by George and Frederic Cuvier, and by M. Flourens. If Dr. Hooker had read the critique attentively, he would have been aware of the existence of this book; and surely the President of the British Association would have deemed some notice due to the Perpetual Secretary of the French Academy of Science and Director of the Museum of Natural History at Paris.

The following sentence occurs in Dr. Hooker's Address: "So far from natural selection being a thing of the past, it is an accepted doctrine with every philosophical naturalist—including, it will always be understood, a considerable proportion who are not prepared to admit that it accounts for all Mr. Darwin assigns to it." This sentence is suicidal; for the end of it kills the beginning. Natural selection in pairing or propagating, and natural selection in forming, originating or developing species, are very different propositions. The first was known before there were any philosophers, and is denied by nobody; the second is the hypothesis of Mr. Darwin.

"Reviews," says Dr. Hooker, "on 'The Origin of Species' are still pouring in from the Continent; and Agassiz, in one of the addresses which he issued to his *collaborateurs* on their late voyage to the Amazon, directs their attention to this theory as a primary object of the expedition they were then undertaking." Now, in the *Athenaeum* for April 4, 1868, Dr. Hooker might have read the very words in which M. Agassiz mentions the Darwinian supposition. They have been reported to Dr. Hooker in a way to induce him—for he would not consciously mis-state their purport—to believe and to intimate that M. Agassiz has said something favourable to the hypothesis under consideration. He said the reverse. We re-quote the pith of them for the benefit of Dr. Hooker. M. Agassiz says, "The South American Fauna will give me the means of showing that the transmutation theory is wholly without foundation in facts." . . . "If the facts are insufficient on our

side, they are absolutely wanting on the other." . . . "We certainly cannot think the development theory proved because a few naturalists think it plausible." . . . "I wish to warn you, not against the development theory itself, but against the looseness of the methods of study upon which it is based."

## PRINCE HENRY OF PORTUGAL.

British Museum, Aug. 21, 1868.

The spot from which Prince Henry the Navigator sent out those explorations which resulted in the discovery of more than half the world, ought not to be without interest for a people whose greatness is derived from those very explorations. I, for my part, am very thankful to my friend, Senhor de Varnhagen, for having dug out of the *Torre do Tombo* the interesting letter of Prince Henry with which he has made us acquainted; but, unfortunately, it has ever since been buried in a place where no mortal would ever think of finding it. It is printed in an anonymous "Account of the Voyage and Doings of some Crusaders who sailed from the Scheldt for the Holy Land in 1189," translated and edited, in 1844, by Silva Lopes, and entered in the Museum Catalogue under the word "Scheldt."

The letter is not, as Senhor de Varnhagen told me it was, an endowment of the order of Christ with the spirituality of Porto Santo and Madeira, but with that of the Villa do Infante itself. The mistake was one that his Excellency might easily fall into in speaking of a document which he discovered a quarter of a century ago; but it none the less misled me. However, what is more important is, that by means of that very document I am able to establish the fact that the old tradition in Portugal respecting Sagres is correct, and that it was not on the point of Belize, but on Sagres, that the Villa do Infante was built. The Prince, pitying the distress of the sailors who were compelled by the weather to wait many days off Cape Sagres, and thus often perished for want of food and other necessities, even water, builds for their comfort his Villa do Infante, "on the other cape which is before the said Cape of Sagres in going from West to East." The question then is, Which is this "other cape"? It is clear that the Prince's merciful purpose precludes the idea of his selecting a point which was inaccessible from the sea. Now this is the case with Belize. The following sentences from Marino Miguel Franzini's "Description of the Coast of Portugal" (the English translation of which, by Capt. W. F. W. Owen, was published by the Admiralty in 1814) will throw light upon the subject:—"The coast between Cape St. Vincent and Sagres is formed of very high rocks (200 feet in some places) that rise perpendicularly out of the sea, except a very small beach in the bottom of the bay of Tonel. To the westward of Sagres is the Bay of Belishe, composed of two bays open to the southwest; the western bay of the two is defended by a fort that can only be seen when very near it; the other bay, called Tonel, is defended by two batteries constructed on the rock of Sagres." This description is exactly confirmed by a beautiful drawing of this coast, on the scale of 1 $\frac{1}{2}$  inch to a mile, in the Cotton Collection, illustrating Sir Francis Drake's attack on Sagres in 1587. It is thus shown that the only landing-place between Cape St. Vincent and Cape Sagres is in the small bay of Tonel, formed by the point of Sagres and another point which answers to the Prince's description of that "other cape which is before the Cape of Sagres in going from West to East." The existence of a fort at Belize may suggest a possibility of landing by an attacking party, but certainly not an habitual landing-place for ships' crews on a perpendicular wall of rock 200 feet high. But further, the Prince's letter informs us that he erected a chapel outside the town, over the port where they disembarked,—an expression which could only apply to the aforesaid beach; and thus we have the site established; and that site is, to all intents and purposes, Sagres. It is not to be wondered at that, when the influence of the Prince's presence was removed, a town situate on the most wretched, perhaps the only wretched spot in sunny Portugal, should not only lose one of its two names, but, in the course of four centuries, have dwindled

down to a mere fishing-station of some three hundred inhabitants. If any doubt remains on the subject, I will observe that Belize is so very much nearer to the great headland of St. Vincent than to the promontory of Sagres that, had the Villa do Infante been built there, the name of Villa de Sagres applied to it in the charter of King João the Second, would scarcely have been appropriate; whereas Cadamosto tells us that the sailors of Pedro de Cintra gave to a cape on the west coast of Africa "the name of Cape Sagres de Guineia, in memory of a fort which Don Henrique had built on one of the points of Cape St. Vincent, to which he gave the name of Sagres,"—a description which, by no process of torturing, could be applied to Belize. Senhor de Varnhagen informed me, when he was here, that he had convinced the Marquis de Sá da Bandeira (to whose kindness I am indebted for the official plan of Sagres and view of the monument erected, at his suggestion, to the Prince's memory, which illustrate my work) of the error under which we had all been labouring; but I am happy to say that I have just received a letter from the Marquis, which shows that my friend was entirely mistaken in that conclusion.

R. H. MAJOR.

## ANTHROPOLOGICAL SOCIETY OF LONDON.

32, St. George's Square, Aug. 22, 1868.

My answer to Dr. James Hunt's letter to you is embodied in my answer, hereto subjoined, to his other communication, the resolutions of his Council, also printed in your paper.

There need be no discussion about the Ethnological Society being prostrated, as *prostrated* is a misprint for *frustrated*; and the passage will read, "At the most efficient means of promoting economy, and enabling us to obtain an amalgamation with the Ethnological Society, now so unfortunately frustrated, I again recommend the immediate abandonment of the *Anthropological Review*, and the liquidation of the liabilities." In what way the amalgamation was frustrated by Dr. Hunt, he can discuss when he likes; but that is not the issue now.

As Dr. Hunt was absent from the Anniversary Meeting he had better be silent about it; but he knows there was no "unanimous" approval of the *Anthropological Review*, or of the proceedings of the Council, any more than there was a unanimous election of himself. I made a very strong protest against the accounts, the financial management, the concealment of the liabilities, the *Anthropological Review* and the Anthropological Exploration Fund; but on the assurances of the Members of the Council to give satisfaction on these matters I abstained from dividing the meeting; but I stated then that unless measures were put on a satisfactory footing, the affairs of the Society must become the subject of a public discussion. These remarks are not reported in Dr. Hunt's official journal, p. lxxv; but it does say that I rose and made a few general remarks, "drawing attention to some of the items, to which Major Owen replied on behalf of the Council." Major Owen replied to what it may be asked. The balance-sheet, according to that journal, was carried *nemini contradicente*.

Dr. Hunt knows this well, and that neither publicly nor in conversation have I in the last two years varied in opinion as to the financial condition of his Council and his *Review*; and it may appear strange I should be represented as having changed my opinion in June by becoming a Member of the Council of the Ethnological Society. Such a statement, however, is no strange thing at the Anthropological Society, as it even occurred there with regard to the *Athenæum*. If it were true, it could have nothing to do with the case under discussion, as it is quite open to me to consent to serve on the Council of the Ethnological Society and others, and to decline to serve on the Council of the Anthropological Society or as its President.

HYDE CLARKE.

P.S. On the 26th I receive a letter, dated the 22nd, calling a meeting on the 2nd of September, for my expulsion. Who will be in town except the clique concerned? Why this hurry?

32, St. George's Square, Aug. 21, 1868.

To Dr. James Hunt, President, and the Council of the Anthropological Society.

Gentlemen.—I have received from you resolutions of your Council, under date August 18th, professing to refer to a communication printed in the *Athenæum* of August 15. This is rather disingenuous, for the document was a letter from me to you, the receipt of which was acknowledged by your Director. That letter refers not only to the finances, but to many other serious matters in connexion with the Society; and as you have not given a satisfactory answer to one single point, I shall recapitulate the subjects for your information, for that of the Fellows, and for the public at large.

My statement is:—

1st. That the *Anthropological Review* contains lampoons on those with whom we are in professed amity, Sir Roderick Murchison, Prof. Huxley, and the Ethnological Society. You resolve that these paragraphs "are considered perfectly harmless by the Council, at the worst they may be thought somewhat satirical." This does not touch the issue.

2nd. That the *Review* is not the property of the Society and not under the control of the Council.

3rd. That it is not known who are the proprietors of the *Review*,—a matter of professed mystery to the Secretary, Director, and Council. Some of your members have informed me that, though they do not know, they suppose Dr. James Hunt, your President, and late Director, to be the proprietor. This is a main point to be determined.

4th. That your Council has not reported to the Fellows "with whom the agreement really has been made." You do not answer this, and, consequently, the "relations between the Society and the *Review* have not been repeatedly and fully explained to the Fellows," but in this and other material points have been concealed, and are now attempted to be concealed, by these proceedings.

5th. That our liabilities are caused by the *Review*. You say "the *Review* has subjected the Society to no losses and liabilities of any kind." The debt due to the printer on the last statement was 900*l.*, chiefly for publications of the Society, and the total debt on the 31st of December, 1867, was 1,400*l.* As you had in the four or five years of the existence of the Society paid the printer about 1,400*l.* on the *Review* account, I affirmed at the last Anniversary Meeting, and I say now, that this improvident measure was the cause of the liabilities, and I ask who are the proprietors?

6th. That the unknown proprietors of the *Review* received a preferential payment of about 1,400*l.*, leaving the Society's own publications unpaid. This also results from the Council's own accounts, and is not answered by you, though it materially affects you, and requires you to state who are the proprietors!

7th. That the Council supplied until this year the non-paying Fellows with the *Review* and all publications, until stopped this year in consequence of my representations, and, therefore, you paid about 700*l.* in excess. Who, then, are the proprietors?

8th. That as the non-paying Fellows were about as numerous as the paying Fellows, the cost to the paying Fellows instead of being 8*s. 4d.* per annum for each Fellow, was 16*s. 8d.*

9th. That the non-paying Fellows, as appears by your own account at the last Anniversary Meeting were about 420, and the paying Fellows 450. Your answer is, that the proportion of paying members is not as stated in the letter. Possibly not now, but what is it? On the 31st of December it was, by your own accounts, as stated by the letter. As your accounts, such as they are, have not been properly rendered from the commencement of the Society, beginning with a mélange of payments and liabilities, the amount may have been wrong, and what it is now you very possibly do not know, any more than you knew the state of your own finances at the Anniversary Meeting, until they were explained by me. Your treasurer then stated that the income had increased and the expenditure decreased, when the figures showed exactly the reverse.

10th. That a large debt of 1,000*l.* or 1,700*l.* has been incurred. You deny this, but do not say what

the amount is. On the 31st of December it was 1,400*l.* One of your own Council, at a late date, stated the amount at 1,700*l.*

11th. That the debt and liabilities leave us without the choice of a President or members of Council. In 1867 a dummy President was nominated. During that year the Presidency went begging without effect; and for 1868 Dr. James Hunt caused himself to be elected President, as he still is.

12th. That Fellows have been touted for in a manner unexampled in scientific societies.

13th. That such new Fellows have left the Society, and that the cause is deserving of inquiry, as it is to the number of 300 or 400.

14th. That most likely Fellows have been elected who did not give their consent and did not pay, and that this is deserving of inquiry.

15th. That in the beginning of the year, and repeatedly, I have urged and do still urge the abandonment of the *Review* to its proprietors, as a measure of justice and imperative economy.

Your communication does not answer any of these allegations, but it does state that the proprietors of the *Review* (who are they?) have undertaken to pay over to the Society any profits arising from its sale. I shall be very glad to learn that any profits have ever been paid over in five years, or are likely to be. My complaint is, that your payments are improvident, that they are in excess, and ought to be refunded.

The Council is welcome to its own opinion that the statements made in my letter are false and calumnious, as the statements are chiefly derived from its own accounts, and confirmed from the mouths of its own members, being put forward very mildly by me. It will be with the public to give the verdict—whether the charlatanism, puffery and jobbery of the Anthropological Society shall be rebuked or approved.

The Council states that I had opportunities of ascertaining the real facts while acting on the Committee for Amalgamation on behalf of the Ethnological Society. I had no such opportunity; and most of the points referred to by me have not yet been investigated. The opinion I arrived at on that occasion was very unfavourable to the financial conduct and condition of the Anthropological Society. As reference has been made to that occasion, I may observe that, apart from other considerations, I am relieved from any necessity for personal recrimination with your Council so long as two of your then delegates, your President and Director, have not redeemed their pledges of resignation given to Prof. Huxley.

Before you talk of expelling me from the Society, and fining me in the sum of twenty guineas, paid by me a few months ago, when abroad, for joining a society of which I then unluckily knew as little as most of your Council do now, it will be as well there should be an independent inquiry into your administration and the conduct of your officers; and if I am found to be in the wrong, your books and accounts should be suppressed as being wrong too. The real issue is not at all as to my conduct; for I am acting within the limits of my rights as a Fellow. If, in the end, you should determine on my expulsion for stating facts furnished by yourselves, and which you cannot refute, you will, perhaps, have the kindness to expel at the same time several members of your own Council, who wish to quit the Society and discharge themselves from liability. On such expulsion, they will find themselves in company of many Fellows who have already determined to leave your Society in consequence of late events, and join a society where they can pursue the study of science without being exposed to the disadvantages attendant on being connected with the Anthropological Society, and of which your resolutions afford another exemplification.

I have been long desirous, if I could not reform it, of disconnecting myself from your Society, where, probably, I am still enrolled under some idle designation in the category of your numerous hierarchy of office-bearers without functions; but I wish to see the end of my money, being exempt as a contributory in case of a winding-up, and meaning also to fight out this matter to the last.

I may be better able to do so than those who feel equally strongly with me the evils that exist, have the same desire to reform the Society, and rescue it from charlatanism, but have not the same determination to follow the matter up on public grounds, as I have done for some time, and shall continue to do, whether I remain a member of the Society or not. Your Fellowship has not yet become a title to respect, and your Honorary Membership has been rejected with contumely.

I require the publication of this in the *Anthropological Review*.

Your obedient servant,  
(Signed) HYDE CLARKE.

#### OUR WEEKLY GOSSIP.

Exeter has been selected for the next meeting for the British Association, with Prof. Stokes as President. Many other towns were eager for the honour of receiving this learned body; among others Brighton and Edinburgh. Brighton has not yet been favoured by a visit, and the attractions of Sussex are very great. A good feeling exists between the town and county—which was far from being the case in Norfolk; and the Association might count on receiving a hearty welcome.

The Norwich Meeting has been pleasant rather than profitable. The local feeling was not strong; and the receipts are about 500*l.* below those of last year at Dundee. The following is a statement of the financial results of the Meeting:—Old Life Members, 196; New ditto, 18; Old Annual Members, 226; New ditto, 117; Associates, 720; Ladies, 682; Foreigners, 45; making a total of 2,004.

The following grants were made:—Kew Observatory: Maintaining the Establishment of Kew Observatory, 600*l.* Mathematics and Physics: Prof. Tait, Thermal Conductivity of Iron and other Metals, 30*l.*—Mr. Joule, Re-measurement of the Dynamical Equivalent of Heat (renewed), 50*l.*—Prof. Sir W. Thomson, Underground Temperature, 30*l.*—Prof. Sir W. Thomson, Tidal Observations, 100*l.*—Mr. Brooke, Rainfall Committee, 50*l.*—Mr. Glaisher, Lunar Committee, 50*l.* Chemistry: Dr. Anderson, Synthesis of Organic Acids (renewed), 12*l.*—Dr. Frankland, Composition of Gases Dissolved in Deep Well Water, 25*l.*—Dr. Matthiessen, Chemical Nature of Cast Iron, 80*l.* Geology: Sir C. Lyell, Kent's Cavern Exploration, 150*l.*—Mr. W. J. Mitchell, Leaf-Beds of the Lower Bagshot Series, 30*l.*—Dr. P. M. Duncan, British Fossil Corals, 50*l.*—Mr. C. Moore, Veins containing Organic Remains in the Mountain Limestone of the Mendips and Elsewhere, 10*l.*—Dr. Bryce, Earthquakes in Scotland (renewed), 14*l.*—Mr. H. Woodward, Sections of Mountain Limestone Fossils, 25*l.* Biology: Prof. Jukes, Kiltoran Fossils, Kilkenny, 20*l.*—Mr. Carruthers, Fossil Flora of Britain, 25*l.*—Dr. Richardson, Physiological Action of the Methyl Series, 30*l.*—Dr. Foster, Products of Digestion, 10*l.*—Dr. Crum Brown, Relation between Chemical Constitution and Physiological Action, 15*l.*—Mr. E. R. Lankester, Investigation of Animal Substances with the Spectroscope (renewed), 5*l.*—Dr. E. P. Wright, Dredging on the Coast of Lisbon, 20*l.*—Sir J. Lubbock, Record of the Progress of Zoology, 100*l.* Statistics and Economic Science: Sir J. Bowring, Metrical Committee, 25*l.* Mechanics: Mr. J. S. Russell, Analysis of Reports on Steamship Performance, 30*l.*—Mr. W. Fairbairn, Manufacture of Iron and Steel (renewed), 100*l.*—Mr. Grantham, Treatment and Utilization of Sewage, 10*l.* Total, 1,696*l.*

The ancient universities are showing a laudable activity in extending their operations. At Oxford, regulations have just been issued with regard to members of colleges who prefer being in lodgings (which has not hitherto been allowed), and members of the university not attached to any college. Both classes are required to reside in lodgings-houses licensed by the university, and under the control of the authorities, housekeepers and students being bound to observe strict rules as to hours and other matters. The unattached students are to have a choice of tutors, specially appointed by the university for their instruction. An application made to the universities for the institution of examina-

tions of teachers, by passing which a person may become a licentiate in education, has been favourably received at Cambridge. If the suggestion be adopted, a valuable certificate of competency will be within the reach of all who deserve it; and we may hope that in time the scholastic profession will be weeded of unqualified pretenders.

The authors of 'A Winter in Corsica' write in explanation:—"As exception is taken by your reviewer in his notice of this work to the publication of the Vice-Consul's letters, pray allow us to explain that they were published with his own full concurrence, as mentioned in the book. The writer even proposed that we should give his name, in order that it might be better known where information could be obtained by future inquirers, a suggestion which we did not think it necessary to follow. Allow us to add, that we had no intention to show the Vice-Consul's disrespect by inserting the letters, nor do we think we have done so. We simply wished to enable our readers to see how far the facts of our experience corresponded to the 'informations' in these letters and elsewhere, which led us to go to Corsica. Nor do we attribute any particular blame to our informant. The fault was our own, if we did not sufficiently bear in mind that his ideas would naturally be Corsican and not English."

THE TWO LADIES.

The Alpine Club has disrowned the Alps. It sounds ungrateful; but the fact is true. For more than a hundred years Mont Blanc has been treated as the monarch of European mountains; the peaks in the northern part of the Caucasus being either unknown or forgotten. Few people thought they were in Europe; all the heights standing on the eastern shores of the Euxine being generally considered, like the main chain of the Caucasus, as in Asia. Yet Elbrus and Kasek are both in Europe; and as three of our Alpine climbers—Messrs. D. W. Freshfield, A. W. Moore, and C. C. Tucker—have just been to their summits (respectively 18,526 feet and 16,540 feet), they are in future to be known as the rivals and superiors to Mont Blanc. The ascents were not difficult, considered as mere climbing; but the country is said to be rough, and the character of the people in the valleys bad.

The old "mountain men" are fast being numbered with the things that were. Information reaches us that the greatest of them all, Kit Carson, the celebrated Rocky Mountain trapper and guide, has died in New Mexico. For upwards of half a century his name has been a household word all along the frontier for daring deeds, and all that constitutes a man in Western eyes. He is commemorated in Carson River, Carson Valley, Carson City, &c. He was Fremont's guide and righthand man in his explorations, and was generally understood to have been of more service to the "path-finder" than was ever acknowledged. Notwithstanding his stern reputation he is said to have been a kind-hearted man, and many tales of his generous disposition are recorded. His famous ride of 700 miles from Santa Fé to Independence is not the greatest of his deeds, though his physique little betokened the man's extraordinary powers of endurance.

The whole of the copies of the two cheapest editions of the print of Bishop Percy's Folio MS.—the forty-two and seventy-five shilling ones—are now in the hands of the trade—Messrs. Willis & Sootheran and Mr. Toovey holding the largest numbers. Of the five-guinea edition all the copies are sold; of the ten-guinea about twenty copies remain unsold. After the sale of these even, it is doubtful whether the promoter will clear his expenses, as the printer's bill is nearly 2,000*l.*, and the cost of copying, extracting, binding, &c., with the 150*l.* fine for leave to copy the MS., raise the total sum considerably above the amount named. Still, it is well to have the work done, though it is no exception to the rule that Early English can be produced only by the sacrifice of time, toil and money on the part of those who work at it. But its turn will come some day.

For the Chaucer Society Mr. William Michael Rossetti has undertaken to prepare a detailed comparison of Boccaccio's 'Filostrato' with Chaucer's

'Troylus and Cressida'. Like that 'Knight's Tale' out of the 'Merchant of Venice' so many lines are cut off, and so either the first or second page is printed in full. It was shown 'Troylus and Cressida' translated into English.

We believe that persons of all ages are attached to us; this even overplus of words seem, some words are words of few letters, great many tend to be both. Upon the morning of the then among whom given to Cons and Watts Logic due none of rent, &c. Oxford perhaps man in a dial marked to have spoken Society. Indeed, could tell When a man says, "Education

A Company with the set to London notes were Park, and somebody verse. The wind blows pitiably milk; runs the

It is ence to the past particularly a smile this paper furnished dent: the end rapidly which the escape exit with the case the man been victim not how

'Troylus and Cryseyde.' The object of this essay, like that of Mr. Ward on the 'Tesside' and 'Knight's Tale,' will be to enable readers to get out of the vagueness of the old "mainly translated from so-and-so" into a knowledge of exactly what lines are translated, what paraphrased, and what are either original or drawn from other sources; so that search may be made among Chaucer's favourite authors for passages not due to Boccaccio, and, if possible, identifications obtained, like that printed in our columns, August the 15th, where it was shown that the celebrated dissertation in the 'Troylus' on Foreknowledge and Free-will was translated from the fifth book of Boethius de Consolatione.

We believe it will be found that, in the bulk, persons of sound classical education are the most attached to the Saxon forms of our language; and this even when learning had led them to rather an overplus of Latin words. Paradoxical as it may seem, some writers of many Norman or Latin words are very Saxon in their structure, and some of few Latin words are very French. But in a great many cases, familiarity with Latin rather tends to the love of pure English, words and forms both. Up to an indefinite time beyond the beginning of this century the dissenters, excluded from the then higher forms of classical education, and among whom the standard had declined, were much given to foreign English. The separation of the Cons and the Non-cons was very remarkable. Dr. Watts published eight editions of his work on Logic during his life; in every one it is stated that none of the letters in the famous *Barbara*, *Celarent*, &c., are significant except the vowels. Any Oxford man (or boy) could have taught him better: perhaps he never talked on the subject to an Oxford man in all his life. This isolation led to a dissenting dialect; schoolboys in a country-town have marked the difference, when the clergy of all kinds have spoken in the same meeting, as for a Bible Society, or the like matter of common interest. Indeed, we knew one boy who used to say he could tell a Dissenter from a Churchman at once. When asked how, he answered, 'Why, the Churchman says, "Are you going home?" the Dissenter says, "Are you proceeding to your residence?" Education and association have destroyed this distinction, and may it never be revived!

A Correspondent proposes a subject for a glee, with three female voices. Certainly music has been set to less musical words. He finds among old notes what the African women sang of Mungo Park, after relieving his wants; together with somebody's alteration of its poetry into the form of verse. Park's rendering of the original is—"The wind blew, and the rain fell; the white man, faint and weary, came and sat under our tree. Let us pity the white man; no mother has he to bring him milk; no wife to grind his corn." The paraphrase runs thus:—

The rain falls cold and dreary,  
The wind blows heavily;  
The white man, faint and weary,  
Sits under our tree.  
Let us pity the white man,  
Faint, weary, and forlorn:  
No mother has he to bring him milk,  
No wife to grind his corn.

It is not to be supposed that anything in reference to the calamity which recently befell some of the passengers in that express train which is popularly known as "The Wild Irishman," could raise a smile. There is provocation for it, however, in this paragraph, in an account of the catastrophe furnished to the Irish papers by their correspondent:—"The paraffin barrels flew on and about the engine, taking fire and exploding with such rapidity as to set on fire those carriages and vans which were nearest the point of collision, and before the passengers, stunned by the effects, had time to escape through the windows, no other means of exit was left for them. All those who escaped from the carriages which took fire informed me such was the manner in which they escaped, and had it not been lost in itself was so slight the victims would have been still greater." Were it not for other accounts, it would be difficult to say how this Irish report would be translated into English.

The Irish Methodists have just accomplished a work which is in itself a significant and exemplary fact. They have established, opened, and set at full work a College of their own in Belfast. It has all been done by Methodist money. The College has cost £26,000, to which British Methodists generally have contributed. In addition, 10,000*l.* is being provided as the nucleus of an endowment; that of the professorships will be in great measure supplied by the subscriptions of the American Methodists. The *Dublin Evening Mail* pertinently remarks—"The Methodists do not place themselves in antagonism to the Queen's Colleges," (some of the professors of which delivered speeches at the opening of Belfast Methodist College,) "nor do they ask for charters or grants."—We may add here, that the Chair of Logic and Metaphysics in the Queen's College, Belfast, is vacant by Dr. M'Cosh's acceptance of the presidency of the ancient College of Princeton, in the United States.

Notices of spelling niceties remark that the *cyder* of the first edition of Macaulay's History has been changed into *cider* in the cheap reprint; and that the prefix *in* of the first edition, *intrust*, &c., has become *en* in the late one.

Magna Charta is, of course, the foundation of our liberties; but it was long before the building rose above the ground. "Nemo liber homo capitatur aut imprisionetur...aut aliquo modo destruetur nisi per judicium parium vel per legem terre." Liber homo! frank home! a fine thing for him! But the villains, villeins, villains,—choose your own spelling,—who made up the majority of the population, what about them? More than a hundred years after Magna Charta, to take a herring out of the shoal, Roger de Felton sold the town of Glaston, "with all his villains in the same town, and with their chattels and offspring [chattels first, observe!]." The only difference between a villain and a slave was that the villain was *glebe adscriptus*, he went with the land. At least it was so in theory: but there are plenty of sales of villains without the land. By the old law, "Le Seigneur poit rob, naufrer, et chastiser son Villein a son volunt, salve que il ne poit luy main." When children are taught history, they are not led to care for villains, or barbarians, or helots; and so ancient England, Athens and Sparta were free states—all the freemen in them were free!

All who have the welfare of Italy at heart, and who regard intellectual enlightenment as the indispensable accompaniment of national progress, will be gratified to learn that a movement is now being made, by the best friends of the Italians, to promote education among the humbler classes in Italy. It is proposed to carry out this desirable object by the establishment of industrial schools on a plan of which it is the best praise to say that it is at once sound, simple and unambitious, and entirely free from the exclusiveness of sectarian feeling. A committee of ladies has been formed; under the presidency of Mrs. Chambers, by any member of which subscriptions in aid of the schools will be gratefully received.

The *Gibraltar Chronicle* shows how they do things in our Spanish fortress and town. One David Benaim, owner of a house, was summoned for neglecting to remove a nuisance, fined five dollars, ordered to abate the nuisance within twenty-four hours, and "to appear at 2 P.M. tomorrow to show that the order had been obeyed." On the Rock it appears they are more tender in feeling for the public than for offenders. In the same journal appears a statement of how three Spaniards were expelled the garrison for seven days for "creating a disturbance with a guitar and singing," serenading, after twelve o'clock at night. Has serenading come to this in Spain! What would be said to organ-grinding and piano-forte-playing at unseasonable hours, as practised in London?

We are asked to mention, for the benefit of readers of Chaucer, that a nice little edition of the French 'Roman de la Rose,' by M. Francisque Michel, is now obtainable for 6*s.* 6*d.*, and that the same editor has now in the same cheap series, a new edition of the 'Chanson de Roland,' and the 'Chronique de Turpin,' as well as a selection of

early Fabliaux from 'Le Grand d'Aussy,' 'Barbazan,' and others. We wish M. Michel would give us a cheap edition of the early French tracts on the *villes*, and other social and political subjects.

The first part of the Lexicon of old and modern Icelandic, by Mr. Guðbrandr Vigfusson will probably appear in the autumn. Instead of merely editing the late Mr. Cleasby's incomplete collections, which Dr. Dasent kept so long in hand, Mr. Vigfusson has produced a new book, with considerable illustrations from our dialects. The Dean of Christ Church, Dr. Liddell, has been helping in the English portion; and to the English student who has now only Möbius and Egilsson, the new full Lexicon will be a great boon.

THOMAS MCLEAN'S COLLECTION of High-Class Modern Pictures and Water-Colour Drawings ALWAYS ON VIEW.—T. MCLEAN'S New Gallery, 7, Haymarket.

M. MORRY'S COLLECTION of MODERN HIGH-CLASS PICTURES is ON VIEW in the Royal Exchange Fine Art Gallery, 24, Cornhill. This Collection contains examples of Ross Bonheur—Clarkson Stanfield, R.A.—Merson—Alma-Tadema—Gérôme—Frère—Landelie—T. Faed, R.A.—John Phillip, R.A.—Le Gall, R.A.—D. Roberts, R.A.—Fritsch, R.A.—Goodall, R.A.—Cox, R.A.—Pilkington, R.A.—Ernest Cole, R.A.—Le Jeune, R.A.—B. Marshall, R.A.—Freud, R.A.—H. H. Munro, R.A.—James, R.A.—Dobson, R.A.—Cooper, R.A.—Gale—Marks—Lidderdale—George Smith—Linnell, sen.—Peter Graham—Oakes—H. W. B. Davis—Baxter. Also Drawings by Hunt, Cox, Birket Foster, Duncan, Topham, F. Walker, E. Warren, &c. —Admission on presentation of address card.

The GRAND ELECTRIC ORGAN, the machinery of which is worked by Electricity, removed from Her Majesty's Opera, by Messrs. Bryceson, to the ROYAL POLYTECHNIC, to increase the Musical Attractions of this Institution. All the other Scientific Lectures, Musical Entertainments, and Homely Spiritual Manifestations, as usual. Admission to the whole, 1*s.* Open from 1*o* to 5 and 7 to 10. Reserved Seats, 6*d.*

## SCIENCE

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#### THURSDAY.

The PRESIDENT delivered the following address:—Fichte, in his lectures on the 'Vocation of the Scholar,' insisted on a culture for the scholar which should not be one-sided but all-sided. His intellectual nature was to expand spherically and not in a single direction. In one direction, however, Fichte required that the scholar should apply himself directly to nature, become a creator of knowledge, and thus repay by original labours of his own the immense debt he owed to the labours of others. It was these which enabled him to supplement the knowledge derived from his own researches, so as to render his culture rounded and not one-sided. Fichte's idea is to some extent illustrated by the constitution and the labours of the British Association. Partly through mathematical and partly through experimental research, physical science has of late years assumed a momentous position in the world. Both in a material and in an intellectual point of view it has produced, and it is destined to produce, immense changes,—vast social ameliorations, and vast alterations in the popular conception of the origin, rule, and governance of things. Miracles are wrought by science in the physical world, while philosophy is forsaking its ancient metaphysical channels and pursuing those opened or indicated by scientific research. This must become more and more the case as philosophic writers become more deeply imbued with the methods of science, better acquainted with the facts which scientific men have won, and with the great theories which they have elaborated. If you look at the face of a watch, you see the hour and minute-hands, and possibly also a second-hand, moving over the graduated dial. Why do these hands move? and why are their relative motions such as they are observed to be?

These questions cannot be answered without opening the watch, mastering its various parts, and ascertaining their relationship to each other. When this is done, we find that the observed motion of the hands follows of necessity from the inner mechanism of the watch when acted upon by the force invested in the spring. This motion of the hands may be called a phenomenon of art, but the case is similar with the phenomena of nature. These also have their inner mechanism, and their store of force to set that mechanism going. The ultimate problem of physical science is to reveal this mechanism, to discern this store, and to show that from the combined action of both the phenomena of which they constitute the basis must of necessity flow. I thought that an attempt to give you even a brief and sketchy illustration of the manner in which scientific thinkers regard this problem would not be uninteresting to you on the present occasion; more especially as it will give me occasion to say a word or two on the tendencies and limits of modern science, to point out the region which men of science claim as their own, and where it is mere waste of time to oppose their advance, and also to define, if possible, the bounr between this and that other region to which the questionings and yearnings of the scientific intellect are directed in vain. But here your tolerance will be needed. It was the American Emerson, I think, who said that it is hardly possible to state any truth strongly without apparent injury to some other truth. Under the circumstances, the proper course appears to be to state both truths strongly, and allow each its fair share in the formation of the resultant conviction. For truth is often of a dual character, taking the form of a magnet with two poles; and many of the differences which agitate the thinking part of mankind are to be traced to the exclusiveness with which different parties affirm one half of the duality, in forgetfulness of the other half. But this waiting for the statement of the two sides of a question implies patience. It implies a resolution to suppress indignation if the statement of the one half should clash with our convictions, and not to suffer ourselves to be unduly elated if the half-statement should chime in with our views. It implies a determination to wait calmly for the statement of the whole, before we pronounce judgment either in the form of acquiescence or dissent. This premised, let us enter upon our task. There have been writers who affirmed that the pyramids of Egypt were the productions of nature; and in his early youth Alexander von Humboldt wrote an essay with the express object of refuting this notion. We now regard the pyramids as the work of men's hands, aided probably by machinery of which no record remains. We picture to ourselves the swarming workers toiling at those vast erections, lifting the inert stones, and, guided by the volition, the skill, and possibly at times by the whip of the architect, placing the stones in their proper positions. The blocks in this case were moved by a power external to themselves, and the final form of the pyramid expressed the thought of its human builder. Let us pass from this illustration of building power to another of a different kind. When a solution of common salt is slowly evaporated, the water which holds the salt in solution disappears, but the salt itself remains behind. At a certain stage of concentration the salt can no longer retain the liquid form; its particles, or molecules, as they are called, begin to deposit themselves as minute solids, so minute, indeed, as to defy all microscopic power. As evaporation continues solidification goes on, and we finally obtain, through the clustering together of innumerable molecules, a finite mass of salt of a definite form. What is this form? It sometimes seems a mimicry of the architecture of Egypt. We have little pyramids built by the salt, terrace above terrace from base to apex, forming thus a series of steps resembling those up which the Egyptian traveller is dragged by his guides. The human mind is as little disposed to look at these pyramidal salt-crystals without further question, as to look at the pyramids of Egypt without inquiring whence they came. How, then, are these salt-pyramids built up? Guided by analogy, you may suppose that, swarming among the constituent molecules of the salt, there is an invisible population,

guided and coerced by some invisible master, and placing the atomic blocks in their positions. This, however, is not the scientific idea, nor do I think your good sense will accept it as a likely one. The scientific idea is, that the molecules act upon each other without the intervention of slave labour; that they attract each other and repel each other at certain definite points, and in certain definite directions; and that the pyramidal form is the result of this play of attraction and repulsion. While, then, the blocks of Egypt were laid down by a power external to themselves, these molecular blocks of salt are self-positioned, being fixed in their places by the forces with which they act upon each other. I take common salt as an illustration because it is so familiar to us all; but almost any other substance would answer my purpose equally well. In fact, throughout inorganic nature, we have this formative power, as Fichte would call it—this structural energy ready to come into play, and build the ultimate particles of matter into definite shapes. It is present everywhere. The ice of our winters and of our polar regions is its handiwork; and so equally are the quartz, felspar, and mica of our rocks. Our chalk-beds are for the most part composed of minute shells, which are also the product of structural energy; but behind the shell, as a whole, lies the result of another and more subtle formative act. These shells are built up of little crystals of calc-spar, and to form these the structural force had to deal with the intangible molecules of carbonate of lime. This tendency on the part of matter to organize itself, to grow into shape, to assume definite forms in obedience to the definite action of force, is, as I have said, all-pervading. It is in the ground on which you tread, in the water you drink, in the air you breathe. Incipient life, in fact, manifests itself throughout the whole of what we call inorganic nature. The forms of minerals resulting from this play of forces are various, and exhibit different degrees of complexity. Men of science avail themselves of all possible means of exploring this molecular architecture. For this purpose they employ in turn as agents of exploration, light, heat, magnetism, electricity, and sound. Polarized light is especially useful and powerful here. A beam of such light, when sent in among the molecules of a crystal, is acted on by them, and from this action we infer with more or less of clearness the manner in which the molecules are arranged. The difference, for example, between the inner structure of a plate of rock-salt and a plate of crystallized sugar or sugar-candy is thus strikingly revealed. These differences may be made to display themselves in phenomena of colour of great splendour, the play of molecular force being so regulated as to remove certain of the coloured constituents of white light, and to leave others with increased intensity behind. And now let us pass from what we are accustomed to regard as a dead mineral to a living grain of corn. When it is examined by polarized light, chromatic phenomena similar to those noticed in crystals are observed. And why? Because the architecture of the grain resembles in some degree the architecture of the crystal. In the corn the molecules are also set in definite positions, from which they act upon the light. But what has built together the molecules of the corn? I have already said regarding crystalline architecture that you may, if you please, consider the atoms and molecules to be placed in position by a power external to themselves. The same hypothesis is open to you now. But if in the case of crystals you have rejected this notion of an external architect, I think you are bound to reject it now, and to conclude that the molecules of the corn are self-positioned by the forces with which they act upon each other. It would be poor philosophy to invoke an external agent in the one case and to reject it in the other. Instead of cutting our grain of corn into thin slices and subjecting it to the action of polarized light, let us place it in the earth and subject it to a certain degree of warmth. In other words, let the molecules, both of the corn and of the surrounding earth, be kept in a state of agitation; for warmth, as most of you know, is, in the eye of science, tremulous molecular motion. Under these circumstances, the grain and the substances which surround it interact, and a mole-

cular architecture is the result of this interaction. A bud is formed; this bud reaches the surface, where it is exposed to the sun's rays, which are also to be regarded as a kind of vibratory motion. And as the common motion of heat with which the grain and the substances surrounding it were first endowed, enabled the grain and these substances to coalesce, so the specific motion of the sun's rays now enables the green bud to feed upon the carbonic acid and the aqueous vapour of the air, appropriating those constituents of both for which the blade has an elective attraction, and permitting the other constituent to resume its place in the air. Thus forces are active at the root, forces are active in the blade, the matter of the earth and the matter of the atmosphere are drawn towards the plant, and the plant augments in size. We have in succession the bud, the stalk, the ear, the full corn in the ear. For the forces here at play act in a cycle, which is completed by the production of grains similar to that with which the process began. Now there is nothing in this process which necessarily eludes the power of mind as we know it. An intellect in kind as our own would, if only sufficiently expanded, be able to follow the whole process from beginning to end. No entirely new intellectual faculty would be needed for this purpose. The duly expanded mind would see in the process and its consummation an instance of the play of molecular force. It would see every molecule placed in its position by the specific attractions and repulsions exerted between it and other molecules. Nay, given the grain and its environment, an intellect the same in kind as our own, but sufficiently expanded, might trace out *a priori* every step of the process, and by the application of mechanical principles would be able to demonstrate that the cycle of actions must end, as it is seen to end, in the reproduction of forms like that with which the operation began. A similar necessity rules here to that which rules the planets in their circuits round the sun. You will notice that I am stating my truth strongly, as at the beginning we agreed it should be stated. But I must go still further, and affirm that in the eye of science the animal body is just as much the product of molecular force as the stalk and ear of corn, or as the crystal or salt of sugar. Many of its parts are obviously mechanical. Take the human heart, for example, with its exquisite system of valves, or take the eye or the hand. Animal heat, moreover, is the same in kind as the heat of a fire, being produced by the same chemical process. Animal motion, too, is as directly derived from the food of the animal, as the motion of Trevethick's walking-engine from the fuel in its furnace. As regards matter, the animal body creates nothing; as regards force, it creates nothing. Which of you by taking thought can add one cubit to his stature? All that has been said regarding the plant may be re-stated with regard to the animal. Every particle that enters into the composition of a muscle, a nerve, or a bone, has been placed in its position by molecular force. And unless the existence of law in these matters be denied, and the element of caprice introduced, we must conclude that, given the relation of any molecule of the body to its environment, its position in the body might be predicted. Our difficulty is not with the *quality* of the problem, but with its *complexity*; and this difficulty might be met by the simple expansion of the faculties which man now possesses. Given this expansion, and given the necessary molecular data, and the chick might be deduced as rigorously and as logically from the egg as the existence of Neptune was deduced from the disturbances of Uranus, or as conical refraction was deduced from the undulatory theory of light. You see I am not mincing matters, but avowing nakedly what many scientific thinkers more or less distinctively believe. The formation of a crystal, a plant, or an animal, is in their eyes a purely mechanical problem, which differs from the problems of ordinary mechanics in the smallness of the masses and the complexity of the processes involved. Here you have one-half of our dual truth; let us now glance at the other half. Associated with this wonderful mechanism of the animal body we have phenomena no less certain than those of physics, but between which and the mechanism we discern no necessary connexion. A

man, for example, can say, *I feel, I think, I love*; but how does consciousness infuse itself into the problem? The human brain is said to be the organ of thought and feeling: when we are hurt the brain feels it, when we ponder it is the brain that thinks, when our passions or affections are excited it is through the instrumentality of the brain. Let us endeavour to be a little more precise here. I hardly imagine that any profound scientific thinker, who has reflected upon the subject, exists who would not admit the extreme probability of the hypothesis, that for every fact of consciousness, whether in the domain of sense, of thought, or of emotion, a certain definite molecular condition is set up in the brain; that this relation of physics to consciousness is invariable: so that, given the state of the brain, the corresponding thought or feeling might be inferred; or given the thought or feeling, the corresponding state of the brain might be inferred. But how inferred? It is at bottom not a case of logical inference at all, but of empirical association. You may reply that many of the inferences of science are of this character; the inference, for example, that an electric current of a given direction will deflect a magnetic needle in a definite way; but the cases differ in this, that the passage from the current to the needle, if not demonstrable, is thinkable, and that we entertain no doubt as to the final mechanical solution of the problem; but the passage from the physics of the brain to the corresponding facts of consciousness is unthinkable. Granted that a definite thought, and a definite molecular action in the brain occur simultaneously; we do not possess the intellectual organ, nor apparently any rudiment of the organ, which would enable us to pass by a process of reasoning from the one phenomenon to the other. They appear together, but we do not know why. Were our minds and senses so expanded, strengthened, and illuminated as to enable us to see and feel the very molecules of the brain; were we capable of following all their motions, all their groupings, all their electric discharges, if such there be; and were we intimately acquainted with the corresponding states of thought and feeling, we should be as far as ever from the solution of the problem, 'How are these physical processes connected with the facts of consciousness?' The chasm between the two classes of phenomena would still remain intellectually impassable. Let the consciousness of *love*, for example, be associated with a right-handed spiral motion of the molecules of the brain, and the consciousness of *hate* with a left-handed spiral motion. We should then know when we love that the motion is in one direction, and when we hate that the motion is in the other; but the "WHY?" would still remain unanswered. In affirming that the growth of the body is mechanical, and that thought, as exercised by us, has its correlative in the physics of the brain, I think the position of the "materialist" is stated as far as that position is a tenable one. I think the materialist will be able finally to maintain this position against all attacks; but I do not think, as the human mind is at present constituted, that he can pass beyond it. I do not think he is entitled to say that his molecular groupings and his molecular motions explain everything. In reality they explain nothing. The utmost he can affirm is the association of two classes of phenomena, of whose real bond of union he is in absolute ignorance. The problem of the connexion of body and soul is as insoluble in its modern form as it was in the pre-scientific ages. Phosphorus is known to enter into the composition of the human brain, and a courageous writer has exclaimed, in his trenchant German, "Ohne Phosphor kein Gedanke." That may or may not be the case; but even if we knew it to be the case, the knowledge would not lighten our darkness. On both sides of the zone here assigned to the materialist he is equally helpless. If you ask him whence is this 'matter' of which we have been discoursing, who or what divided it into molecules, who or what impressed upon them this necessity of running into organic forms, he has no answer. Science also is mute in reply to these questions. But if the materialist is confounded and science rendered dumb, who else is entitled to answer? To whom has the secret been revealed? Let us lower our heads and acknowledge

our ignorance one and all. Perhaps the mystery may resolve itself into knowledge at some future day. The process of things upon this earth has been one of amelioration. It is a long way from the *Iguanodon* and his contemporaries to the President and Members of the British Association. And whether we regard the improvement from the scientific or from the theological point of view,—as the result of progressive development or as the result of successive exhibitions of creative energy,—neither view entitles us to assume that man's present faculties end the series; that the process of amelioration stops at him. A time may therefore come when this ultra-scientific region by which we are now enfolded may offer itself to terrestrial, if not to human investigation. Two-thirds of the rays emitted by the sun fail to arouse in the eye the sense of vision. The rays exist, but the visual organ requisite for their translation into light does not exist. And so from this region of darkness and mystery which surrounds us, rays may now be darting which require but the development of the proper intellectual organs to translate them into knowledge as far surpassing ours as ours does that of the wallowing reptiles which once held possession of this planet. Meanwhile the mystery is not without its uses. It certainly may be made a power in the human soul; but it is a power which has feeling, not knowledge, for its base. It may be, and will be, and we hope is, turned to account, both in steady and strengthening the intellect, and in rescuing man from that littleness to which, in the struggle for existence, or for precedence in the world, he is continually prone.

'Report of the Lunar Committee.'—The chairman, Mr. J. GLAISHER, in introducing this Report, remarked that the work accomplished was of a similar character to that of preceding years. The mapping of the surface had proceeded steadily and accurately, so that the positions and characters of the objects on the three areas already issued, amounting to upwards of 300, might be relied on as fully equal to settle any question that might arise as to the state of any one of them at the time of the construction of the portion of the map on which it is situated. The map is executed in simple outline, the position and extent of each object being laid down from measurements made on two photographs, viz. De La Rue's, 1865, October 4, and Rutherford's, 1865, March 6. With regard to conventional systems of shading to represent the relief of the surface Mr. Glaisher expressed a doubt of their possessing sufficient accuracy for the settlement of a question of change; indeed, in the *Linné* controversy not one has been found to possess sufficient weight to settle it. The main object which the Committee has kept steadily in view is the truthful delineation of position, accompanied by a truthful description of the appearance and character of lunar objects. Drawings of the moon's surface, while they are of great use in the identification of objects, are inadequate to the investigation of the subject of change; the rare occurrence of the combination of circumstances necessary to produce exactly the same appearance of an object prevents that similarity of detail being attained in any two drawings made by the same observer under nearly the same conditions of illumination, that is essential to decide on physical change. Mr. Glaisher referred to two drawings by the same observer made under nearly similar conditions, one representing *Linné* as a small cone, the other as a large shallow crater, and remarked that in one case we had the true condition of *Linné*, in the other a modified appearance dependent upon some unknown agency. No less than thirty-three gentlemen are engaged either in systematically observing certain zones in accordance with instructions issued by the Committee, or in examining particular objects at its request, the instruments employed varying from three inches to twenty-two inches in aperture. Instances of difference between former delineations and the present state of the moon's surface are increasing, and although no decided instance of change has been detected, the greater the number of differences the nearer we approach the discovery of change. Let but one undisputed instance of physical change be fully established and selenology acquires from that

moment a new aspect. The study of the moon's surface will then no longer consist in recording features that are unalterable, or in seeking to explain differences of aspect by varying angles of illumination and changes dependent upon libration. It will at once take a standing at least equal to those branches of astronomy which have been of late years particularly fruitful in discovery. The observation of change in the angles of position of neighbouring stars has resulted in the discovery of binary systems; changes in stellar magnitudes are opening new fields of research, especially in connexion with certain classes of stars; and spectrum analysis, and doubtless the discovery of real physical change on the surface of the moon, will lead to results the most interesting as well as the most important. Mr. Glaisher expressed a hope that his appeal for an increase of lunar observers would meet with a ready response, and that the number would be greatly augmented by gentlemen possessing superior optical means, so that the surface of our satellite may be brought under still more searching scrutiny than hitherto been the case, and objects akin to *Linné* more sedulously and critically examined.

The Report was then presented by the Secretary, Mr. W. R. BIRT.—It showed that during the past year a further section of the moon's surface of 25 superficial degrees in extent, containing 99 separate objects, has been engraved, and a catalogue of the objects printed. Several copies of the plate and catalogue have been distributed among gentlemen engaged in the work—other sections of the same extent are in a forward state. Observations have been made on numerous objects in each area, as well as upon other interesting objects on the moon's surface, particularly the Crater *Linné*. By the kindness of Edward Crossley, Esq., who has lent the Committee his telescope of 7½ inches aperture, 12 feet focal length, the value of this portion of the labours of the Committee is much enhanced, and a systematic examination of the objects laid down from De La Rue's and Rutherford's photographs, has been commenced, and some valuable results obtained. In the course of his examination of these objects, Mr. Birt has found it necessary to divide the bright spots on the moon's surface into two classes: first, those which are very brilliant, and which are evidently the slopes of mountains, or the interiors of craters; and second, those which do not exhibit so great a degree of brilliancy, but shine as white spots, with a soft nebulous light. In form, these spots are generally round, the edges being mostly ill-defined. Mr. Birt gave as instances the now celebrated spot *Linné*, a mountain peak known as *Posidonius gamma*, both on the large plain called the *Mare Serenitatis*, another near the centre of the moon, and a fourth, discovered by Herr Schmidt, of Athens, a little east of the crater *Alpetragius*. The result of Mr. Birt's observations of three of these objects is, that when the sun is seen from them is low, they are bright spots of the first class; the mountain sides and crater slopes shining brilliantly, and at the same time being well defined. As the sun rises higher and higher above their horizons—in some cases earlier, in others later—the appearance of the mountain or crater is entirely lost, and the white spot of the second class appears. The Report contains a discussion of the observations of these spots in respect to the sun's altitude and azimuth as seen from them; but we understand that the observations are not yet sufficiently numerous to determine correctly the changes of appearance with changes of the sun's altitude and azimuth. The Report entered somewhat largely into the question of change on the moon's surface, which is still undecided. The uncertainty as to the accuracy of former delineations and records combined with the extraordinary changes which some objects undergo—changes not altogether new, as they have been observed previously by Schröter,—render it very difficult to decide as to whether any real change has taken place. Before any correct conclusion can be arrived at, it is necessary to know the usual course of appearance presented by the spots during a lunar day dependent upon the sun's height and position in the lunar heavens. Although this is a work which requires much careful observation and accurate discussion,

it appears to be the best course of proceeding, as from the number of observations, combined with the known ability of the observers, the results obtained will tend to place the science of Selenography on a much surer basis than that on which it now rests. The principal charm of astronomy, it is said, lies in the study of change, of progress, development and decay, and especially of systematic variations taking place in regularly-recurring cycles.

'On Changes of the Moon's Surface,' by Baron VON MAEDLER.

'On the Extent of Evidence of Change on the Moon's Surface,' by Mr. W. R. BIRT.—The author of this paper remarked that the two opposite questions of fixity of, or change on, the Moon's surface must be decided by observation, and not assertion. With regard to evidence on the question of fixity, such evidence—resulting from observation, and not including theoretical considerations—must be exceedingly scanty; indeed, it is difficult to conceive how the unalterable state of the surface of our satellite can be determined by observation, for if, as has been asserted, "all changes on the Moon's surface have ceased myriads of ages ago," we are certainly destitute of the records of the observation of the real state of that surface at so remote a period; and, even if "fixity" of the more minute details be really established at any one point by a long series of observations, it would be no argument for its universal prevalence, since a state of quiescence might be attained at very different epochs in different regions. The author next proceeded to examine the question of change, and glanced at the attempts to perpetuate a knowledge of the Moon's surface by means of maps, drawings and topographical descriptions, remarking that it is by the study of details that a definitive answer must be given. These details are numerous, embracing mountains, valleys, plains, craters, rings apparently nearly filled with bright spots as mountain tops, and others less bright, but presenting phenomena difficult of explanation, dark spots with bright rims, or bounded by distinct lines, separating them from the surrounding surface. All such objects must be carefully studied before a conclusion can be drawn as to their unalterable stability or their mutation. The means of obtaining evidence on these points consists in the examination of delineations and topographical notices on the one hand, and comparing them with the Moon, by personal observation of the objects, on the other. Mr. Birt referred to a diagram giving two aspects of the same spot, one as given—lighter than some surrounding objects—by three authorities, Lohrmann, Beer and Mädler, and Schmidt; the other, as observed by himself at a recent date, in which the spot is darker than all surrounding objects. In connexion with these differences of colour, he put the question, Can we decide for change? In reply, he pointed out one great disadvantage, namely, the uncertainty of the number of observations on which the earlier records rest, and showed the great importance not only of increasing our own observations, but also of soliciting the aid of others, that there may be no want of confirmatory evidence to establish the certainty of what is recorded. In the absence of confirmatory observations, Mr. Birt considered that the evidence capable of being brought to bear on questions of change is very limited, especially as former records are more or less open to be regarded as inexact drawings or inaccurate statements when they happen to differ from present observed appearances.

'Researches on Spectrum Analysis of the Stars,' by FATHER SECCHI.

'On some further Results of the Spectrum Analysis applied to the Heavenly Bodies,' by Mr. W. HUGGINS.

'On the Passage of Radiant Heat through Liquids,' by Mr. W. F. BARRETT.

'On a simple Method of exhibiting the Combination of Rectangular Vibrations,' by Mr. F. W. BARRETT.

#### SECTION B.—CHEMICAL SCIENCE.

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*Vice-Presidents*—Sir B. BRODIE, WARREN DE LA RUE, DR. GLADSTONE, PROF. LIVINGSTON, PROF. W. A. MILLER, PROF. ODLING, PROF. ROBERTSON, PROF. W. W. WILKINSON.

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#### THURSDAY.

The PRESIDENT alluded to the interest now generally taken in experimental science, and especially in chemistry, but regretted that this country, which owes so much of its position to science, provides no adequate system of education. He referred to Germany and Switzerland. The laboratory at Zurich cost 14,000*l.*, Bonn 18,000*l.*, Leipzig 12,000*l.*, and Berlin 47,000*l.*. Fortunately for England, however, we had a great amount of individual enterprise, and the past year would compare very favourably with previous ones, as to our advancement in knowledge of chemical facts and theories.

'On the Chloride of Methylene formed by the Action of Nascent Hydrogen on Chloroform,' by Mr. W. H. PERKIN.

'On Sulpho-cyanide of Ammonium,' by Dr. T. L. PHIPSON.—The author stated that for many years past the ordinary sulphate of ammonia manufactured in gas-works by neutralizing gas-liquor with sulphuric acid contained small quantities of sulpho-cyanide of ammonium, say from 2 to 4 per cent.; but latterly many specimens of commercial sulphate of ammonia contained a very much larger proportion, some specimens yielding as much as even 75 per cent. of sulpho-cyanide. So that, in fact, the article might rather be named impure sulpho-cyanide of ammonium than sulphate of ammonia. The knowledge of this fact is of great importance to makers of chemical manures and farmers, inasmuch as only one-half of the nitrogen existing in sulpho-cyanide can be made available for manuring purposes.

'Refraction Equivalents and Chemical Theories,' by Dr. J. H. GLADSTONE.

'On the Action of Nuclei in inducing Crystallization,' by Prof. C. TOMLINSON.—Prof. Tomlinson argued that the production of crystals in super-saturated solutions could not be induced by the introduction into them of solid bodies in a chemically clean state, while if the reverse were the case it would always be readily induced.

'On the Chemical Composition of the Great Cannon of Mohammed II., recently presented by the Sultan Aziz Khan to the British Government,' by Mr. F. A. ABEL.

'Analysis of the Ancient Roman Mortar of the Castrum of Burgh, Suffolk,' by Mr. J. SPILLER.

#### SECTION C.—GEOLOGY.

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#### THURSDAY.

The PRESIDENT said—Suffolk and Norfolk, which geologically as well as ethnologically, formed one region, were part of the slope of the North Sea basin, for the North Sea valley was a true physical depression compared with its breadth, and the depth of the North Sea was exceedingly small. The channel running parallel with the coasts of Essex, Suffolk, and Norfolk had a maximum depth of only 180 feet, so that a change to that amount of depression of sea level would lay bare the whole of the sea-bed from the coast of Northumberland across to Jutland. A depression of 120 feet would extend the great Germanic plain nearly to our area. A deep submarine trough had been traced at a mean distance of about fifty miles from the coastline of Norway. Across the line of greatest depth the change was abrupt. This curious feature was

just what would have been produced by the subsidence of the whole of the southern portion of the Scandinavian region, together with fifty miles of area around to a depth of 600 or 700 feet. There were good grounds for supposing that such had been the process; and the geological history of the basin seemed to supply the precise date of the subsidence in question. It was the depression of the Scandinavian mass along the line indicated which produced the channels of the Skagerrack and the Kattegat, and opened a communication from the North Sea into the Baltic depression. Geologically, some of the later stages or periods of the earth's past history were so abundantly illustrated over the East Anglian area, that he could not help hoping that this Section would make local geology a prominent subject of their deliberations at this meeting. The points of interest in this area belonged to the Kainozoic period, of which he proceeded to give a summary. The geologist found himself wanting when he attempted to sketch out in consecutive order the history of any district. Although the geologist might know of all the details of the successive conditions of the thick series of depositions exhibited in the London basin, and have satisfied himself of the great extension they must once have had beyond their present area; yet of the process by which so much had been removed he knew nothing, nor of what was being done in any other region of the globe when so much was being undone here. For their present outline we need not go further back than in East Anglian geology to the time of the early marine formations of the Kainozoic age, when the British islands group were united as a whole with a broad European continental region. After showing that the Kainozoic formations had a striking uniformity in their general history,—that those of Spain and Portugal, of the Bordeaux basin, of Touraine, with its Breton dependencies, and of our North Sea basin, were all indentations from the great Atlantic, that in all the character of the Fauna was Atlantic, that in each of the southern and now desiccated sea-basins the Fauna was now more southern than that now living in the adjacent seas, which was evidence of a twofold change: first, a set, or extension northwards, of a Marine Fauna, which in its recognized form was West African, afterwards becoming less southern over the same areas; and, next, the areas of these formations were first presented as terrestrial surfaces, then as lateral branches of the Atlantic, lastly as laid bare again, the process proceeding from south to north,—he proceeded to say that the crag waters were expelled from the North Sea area by the rise of the land on the south of the great bay. The most southern points for the crag beds in Belgium were now the highest above the sea-level. This elevation decreased till we came to Norwich, where, if any part of the so-called Norwich crag or the fluvi-marine be of that age, such estuary beds must have been then in the same position as they were now or at the same level. On evidence such as this, the North Sea area, after the period of the early Kainozoic Fauna, or true crag, was seen to be passing again to the condition of terrestrial surface. This old depression of the North Sea, like other tertiary basins, again became part of the general European land surface. A long list of animals—some of which ranged over Central and Southern Europe, no doubt including this very district—had left their remains there; but as to how many of these co-existed, or to what extent they indicated a successive occupation, was still an undecided question. The forest bed of Cromer gave a glimpse of what was the vegetation of this period; but it was more than probable that it must be taken only as the Flora of the last stage of terrestrial conditions antecedent to the next great physical change rather than of the whole period. The whole mammalian Fauna, from the Norfolk mastodon to the mammoth (*Elephas primigenius*), seemed to offer itself as an assemblage of the members of nomad tribes, which have yet to be reduced to order of time. The general condition of Northern Europe was terrestrial for the whole of the Tertiary or Kainozoic period; during that time its conditions as to climate passed from warm to temperate and to arctic. To its close belonged the evidence, everywhere recurring and at

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every level, of its sub-aërial glaciation and greater elevation.

'On the Denudations of Norfolk,' by the Rev. O. FISHER.—The author first called attention to the denudations upon the land surface, stating that a certain amount of the fine material was being carried into the rivers, and by them deposited at the heads of the broads or in the sea. This denudation by pluvial action was undoubtedly greater where the land was under the plough than it would be otherwise. Upon the coast the sea was reducing the solid surface to a uniform level. Where the land was high it cut away the bottoms of the cliffs, which then founded down, and the fallen matter was in its turn carried off; and where it was low the general contour of the coast was being continued by sand dunes or "Marram Hills," so that where the lower end of a valley was submerged, its bottom was being raised seaward, and reduced to a uniform level and continuous coast line. But when the waves had played their part, the action of the sea was not ended. As the sea cut further into the sand, the ground laid under water became subject to the action of tides, so as to be kept, on the whole, at a uniform depth for a given distance from land. If the waste of the shore was prevented by artificial means, the sea was found to deepen rapidly, and the inclination of the bottom from the shore to be increased. This marine action, if considered, did not appear possible to give rise to any very great inequality of surface, but, on the other hand, it must tend to reduce those already existing. All great inequalities of the sea bottom must either have been caused by the land having become submerged more rapidly than the sea had time to move its coast-line, or else by elevations and depressions taking place beneath the ocean, or, in a few instances, by powerful currents confined by local circumstances to a narrow course. Since the tides deepen the sea below the level to which the waves acted upon the coast, it must follow that the harder rocks would be lowered more slowly than softer, and shoals be formed. It was to such a denudation as just described that the form of the surface of this country might be supposed to be due at the period preceding the deposition of the crag. As the sea bottom at the period of the crag consisted of a shaly bottom of chalk, nearly level on the eastern side of our area, while the same stratum rose as dry land to a considerable elevation towards its central and western portions. But there was no distinct indication of the position and ancient coast line of the Crag Sea, though it extended further inland than Norwich, Horstead, and Coltishall; indeed, he saw no reason to doubt that the remains of ferruginous shelly gravel adhering to the surface of the chalk on the beach at Lower Sheringham belonged to it. The appearance of the chalk at Bungay and of the upper Norwich Crag at Aldeby, near Beccles, led to their placing the junction of the two deposits somewhere between Beccles and Bungay. There were no data for determining the coast line of the Crag, but it was probably a line of cliffs extending in a direction somewhat parallel with the present eastern coast of Norfolk, and about twenty miles westward of it. At Yarmouth, where the London clay covered up the chalk, a different condition of things must have obtained. Indeed, in early post-cretaeous times, there seemed to have been a depression of the erosion in the course of the valley of the Waveney and the Little Ouse. There was no evidence that the sea and the Crag period occupied any part of the present estuary or wash. It was probable, on the other hand, that the chalk must have extended considerably to the westward of its present escarpment. Immediately upon the chalk at Thorpe, where the crag rested upon it, was a thick bed of angular flints, which appeared to be the accumulated result of the removal of the chalk intervening between several successive layers. It was amongst these flints that numerous bones, teeth, and tusks of mastodon and *Elephas meridionalis* and other mammalia occurred. His opinion was that the chalk to which these flints were due was removed by erosion of currents, which were not strong enough to remove the flint. To account for the bones found amongst flints there was the

alternative that the chalk formed a land surface on which bones were left, the flints being accounted for by sub-aërial solution of the chalk. After discussing the difficulties which this supposition raised, he proceeded to consider the succession of events subsequent to the period of the crag. As to the Chillesford clay, he said, although he agreed with Messrs. Wood regarding the sequence downwards from the Chillesford clay to the crag, whether red or fluvi-marine, he did not think that its position relative to the forest bed and glacial series above was yet satisfactorily made out. Mr. Gunn considered the bed of flints, with bones of mastodon, lying upon the chalk, to be worthy of the name of mammaliferous crag, and he entirely dissociated it from its respect of age the shelly sand which at Thorpe and elsewhere covered it. He (Mr. Gunn) would intercalate the forest bed in time between this bed of flints and shelly white crag sand, and continue the sequence upwards with the Chillesford clay, and next the fluvi-marine series. Mr. Prestwich had found what he considered traces of the Forest Bed in Easton Bawent Cliff, above the Chillesford clay, and as he thought indications of the same sequence in the upper part of the cliff at Walton-on-the-Naze. Mr. Fisher inclined to Mr. Prestwich's views.

Prof. PHILLIPS said an examination of the coast of the county would discover that there was in nature even within the gravels, clays, and flints, a variety of phenomena of the greatest possible interest for tracing the history of this part of the earth's surface through all the courses of time which belonged to it. Although it might seem to many persons rather minute and perplexing to decide the relative ages and deposits, some of which were represented only by fragments and occasionally at considerable distance, nevertheless it was a work to be done, and it had been observed that the toil and trouble connected with the most recent of all deposits, to which it might be supposed our knowledge would be more applicable, was the greatest. Every one accepted the theory of the passage of ice over the seas of this country in former times, but everybody was not aware of the depth of the sea at particular portions of the long periods traced in Mr. Fisher's paper, nor that Mr. Trimmer and Mr. Prestwich had been at great pains in examining the Norfolk coast to endeavour to clear some difficulties with regard to the position of large masses of chalk and displaced portions of other strata. After referring to Mr. Gunn's magnificent collection of elephantine remains, Prof. Phillips said there was a certain Fauna below the whole of the glacial deposits which contained a peculiar elephant, the mastodon, and that above this the changes of animal life appeared to be distinctly marked, even of terrestrial creatures. At a later period the reindeer was introduced, and all were aware that the great number of cervian quadrupeds of late years had come to be recognized, so there was a distinction in the race of Elephas, of Bovidae, and of Cervidae. All these groups showed that the portion of time has been a long one, that there had been produced in it a variety of forms not seen before, that many ancient forms had died out, so that they were able by the process to connect the earliest period of the deposits, including the crag, with all these. Although each stage had its own peculiar animals and peculiar points in history that land and sea were traceable to now, with some variations. Those ancient animals had their representatives now, and the whole course of geological time from the crag to now was only one group of deposits, one group of circumstances, one great series of time.—Sir CHARLES LYELL said there were so many points of interest and controversy stated in the paper just read, that he would remark upon one or two. After congratulating the Section upon the advance that has been made in the knowledge of this class of works since he accompanied Dr. Arnold, the naturalist of Sir Stamford Raffles, of Java, in a tour round the eastern coast, and observing the different receptions now given to glacial theory to what would have been the case at that period, said, having seen hundreds of icebergs in a latitude somewhat further south than this floating in the Atlantic, some carrying sand, others rock, he could not refer

to such a sight without considering that it would be somewhat rash to attribute change to astronomical causes, of which there was a hint in Mr. Fisher's paper. The astronomical causes affecting the other side of the Atlantic in the northern hemisphere were the same as those which affected this side. Why, then, did we enjoy a mild climate; whereas westward we may witness the phenomenon of hundreds of icebergs, some of them stranded on the Newfoundland banks for years before they melted? Certainly not for any difference in the astronomical state of things, but, as he contended, from the different relative positions of land and sea, and the difference of oceanic currents. At the same time they were reconciled to the application which Mr. Fisher had made to icebergs as explaining many of the phenomena so well described by him. Speaking of marine denudations, Sir Charles said the amount of marine denudation had been somewhat exaggerated, especially when an attempt had been made to account for cliffs and valleys principally by that cause. Nevertheless, he thought the current of opinion was running now a little too much in the direction of attributing everything to rain and rivers. Lately he observed in the writings of one of his distinguished contemporaries, that in order to extenuate the amount of denuding action attributable to the sea, it was attempted to show that all the waste of the cliffs was very insignificant in amount when compared with the amount of waste which undoubtedly was going on by the action of rain and rivers, and which was disturbed by the enormous deposits in deltas of great rivers, all of which were due to the matter removed exclusively by fluviatile and pluvial action. In the paper just read, allusion was very properly made to the denuding action of the sea, quite apart from that which was confined to lines of sea coast. But he was of opinion that the question was between the rate of rising and the rate of denudation.

'On the Glacial Structure of Norfolk and Suffolk,' by Messrs. S. V. WOOD and F. W. HARMER.

'The Norwich Crags and their Relation to the Mammaliferous Bed,' by J. E. TAYLOR.

'On the Molluscan Fauna of the Red Crag,' by A. BELL.

#### SECTION D.—BIOLOGY.

*President—Rev. J. M. BERKLEY.*

*Vice-Presidents—Prof. BALFOUR, G. BENTHAM, G. BURKE, W. H. FLOWER, Prof. HUMPHREY, Prof. NEWTON, Prof. ROLLESTON, Prof. E. B. TYLER.*  
*Secretary—W. FIRTH, M. FOSTER, Prof. LAWSON, H. T. STANTON, Rev. H. B. TRISTRAM, Prof. E. PERCEVAL WRIGHT, T. S. CORBOLD.*  
*Committee—Dr. ANSTIE, Prof. ARCHER, F. BATEMAN, Prof. HUGHES, Prof. J. BUCHANAN, Prof. J. C. CLARK, Dr. COLLINGWOOD, COUNT CASTRACANE, DR. CHILDE, DR. CLIFFORD, J. T. COOPER, PROFESSOR CLELAND, W. CARRUTHERS, H. DENNY, H. DEANE, H. E. DRESSER, PROF. DICKSON, DR. THORNTON DICKSON, D. DUNN, M. P. EDGEWORTH, PROF. FAIRFAX, COL. LAKE FOX, J. FOSTER, DR. GANGEE, PROF. GRIMSHAW, PROF. GREEN, PROF. GIBB, H. GUNTHER, PROF. H. H. HIGGINS, PROF. HUNTER, DR. HAMBURG, J. HOGARTH, DR. J. D. HOOKER, R. HUTCHINSON, DR. HEATON, REV. L. VENYARD, DR. J. LUBBOCK, DR. MACALISTER, DR. P. H. MARIE, PROF. MACDONALD, J. M. MACKENZIE, DR. MELROSE, R. M'ANDREW, DR. MAXWELL, DR. W. M'INTOSH, REV. A. NORMAN, PROF. NILSSON, T. NUNNELLY, DR. O'CALLAGHAN, DR. RICHARDSON, DR. TYNDALL, ROBERTSON, H. STEVENSON, DR. P. H. PYE SMITH, T. THOMSON, PROF. OTTO TORRELL, PROF. R. H. TRAQUAIR, H. M. UPCHER, PROF. VOGT, A. R. WALACE, M. WEDDELL.*

#### THURSDAY.

##### *Department of Zoology and Botany.*

The PRESIDENT delivered his opening address.

'Last Report on Dredging among the Shetland Islands,' by Mr. J. G. JEFFREYS.—In spite of the weather, which was this year unusually cold and boisterous, some further results were obtained. A fine species of Pleurotoma (*P. carinata*, Phillipi) was added to the British Fauna, having been first discovered as a Sicilian fossil and since recorded as inhabiting the coasts of Upper Norway. Several of the rarer species, peculiar to the Zetlandic seas, also occurred. Other departments of marine zoology would be reported on by Messrs. Norman and Waller and Drs. Günther and M'Intosh. Mr. Jeffreys then compared the mollusks of our North Sea with those from the Mediterranean and Adriatic, which he had carefully investigated, as well by his own dredgings in the Gulf of Spezia as by the examination of nearly all the public and private collections. Although the littoral species of the northern and southern parts of the European seas exhibit a considerable difference, there is a remarkable identity between those which inhabit

deeper water. Out of 317 Zetlandic species no less than 244 are found living south of the Bay of Biscay, 203 being found north of the British seas. This concordance partly arises from different names having been applied to the same species by British and foreign writers on the subject. A summary of the results from all the dredgings by the author in Shetland was given under several heads, including the comparative size of specimens of the same species from the northern and southern parts of the European seas, the colour of shells from deep water, the geographical and bathymetrical distribution of species, the identity of certain fossil and recent shells, the devolution of species, and the course of the Gulf-stream with respect to the oceanic mollusca.

The Rev. A. M. Norman spoke of the great value of Mr. Jeffreys's dredging researches. The crustaceans, polyzoa and sponges had fallen to his care, and he believed that most important additions to our knowledge were made through Mr. Jeffreys's constant excursions.

'On Shetland Sponges, and on a remarkable New Genus of Sponge,' by the Rev. A. M. NORMAN.

**'Report on Mr. J. G. Jeffreys's Zetlandic Annelids'**

Report on Dr. J. G. Jeffreys's Cetacea Annelids of 1867," by Dr. M'INTOSH.—The author, who is at present working very carefully at the Annelids, having in preparation a book for the Ray Society on the British forms of that group, has had the opportunity of studying the Annelids obtained by Mr. Jeffreys in Shetland. Many species were found in the collection new to Britain and some which appeared to be new to science. Dr. M'INTOSH expressed his opinion that the *Antinoë Zetlandica* of Mr. Lankester was the *Ennoë nodosa* of Sars; also that *Halozydna Jeffreysii* and *Harmothoë Mahugreni* of the same author were respectively *Halozydna gelatinosa* of Sars and *Harmothoë longiseta* of Grube.

Mr. E. RAY LANKESTER concurred with Dr. M'Intosh as to the probable identity of *Haloscyphus Jeffreyi* and *H. gelatinosa*. But as to *Harmothoë Mahugreni* he felt that Grube's description was insufficient to warrant an identification with his *H. longisetis*, and he declined to accept Dr. M'Intosh's mere opinion on this matter, seeing that he had not examined Grube's type specimens.

'On *Hyalonema boreale*, Loxen, and Allied Forms,' by the Rev. A. M. NORMAN.

'On the Genera *Palythoe* and *Zoanthus* Coating Sponges,' by the Rev. A. M. NORMAN.

'Remarks on the Properties of *Atropa rhomboidea* (Hooker) in connexion with its Botanical Character,' by Prof. BALFOUR.

'Notices of the Occurrences of *Hieracium collinum* (Fries) in Selkirkshire, with Remarks on some recent Additions to the Scottish Flora,' by Prof. BALFOUR.

‘On the Re-Discovery of *Scirpus parvulus*,’  
by Mr. A. G. MOORE.

*Department of Physiology.*

'Report on the Action of Mercury on the Secretion of Bile,' by Prof. BENNETT.—Prof. Bennett read the Report of the Edinburgh Committee on the action of mercurials on the liver. This Committee comprised amongst its members Professors Christison, MacLagan and Bennett, and Drs. Gamgee, Rutherford and Fraser. The object of the experimental investigation which they undertook was to determine whether the different preparations of mercury exert any marked influence in increasing or diminishing the secretion of bile. To determine the point, the Committee were obliged to make observations on dogs in which biliary fistule were established. These enabled the whole of the bile secreted by the dog to be collected, weighed and analyzed, both before and after the administration of mercury. The experiments performed were of an elaborate character, and led the Committee to the conclusion that, when given in large or in small doses, mercurial preparations are without effect upon the secretion of bile until the dose has actually become poisonous, when a considerable falling off is noted. That the dog was suited to such experiments was shown by the fact that mercurial preparations exert substantially the same action on the dog as on man.

An animated debate followed the paper, in which Mr. FLOWER, Dr. RICHARDSON, Dr. CRISP, Dr.

**INMAN**, Prof. **GROSS**, Dr. **GAMGEE** and others took part. Dr. Richardson and the whole of the speakers commended in very high terms the labours of the Committee, and suggested that, as they had succeeded in showing that mercurials do not exercise any action on the secretion of bile, they should now study its influence upon the other intestinal secretions, and notably on the pancreatic juice, which he thought might be probably increased.—Dr. **CRISP** objected to the validity of experiments performed on the dog, and suggested the advisability of using the pig instead; whilst Dr. **GROSS** seemed to consider that experiments on man could alone be useful in determining the action of drugs. Dr. **GAMGEE** discussed at length the value of experiments on the lower animals as means of furnishing us with knowledge with regard to the physiological and therapeutical action of drugs, and asserted that, when rigidly interpreted, these afforded perhaps the most valuable information at our disposal. He pointed out that all the proof which could be obtained by experiments on lower animals was afforded by the thorough set of observations which had been carried out on the dog, and he specially showed the inapplicability of the pig for the purposes of such inquiries, seeing that the presence of hydrochloric acid in the bile of this animal points to a radical modification in the lower functions in its case. Dr. **GAMGEE** also insisted that we should not attach an undue influence to the bile—a secretion which he considered represented only an infinitesimal portion of the work done by the liver, and which merely contained the products of those great chemical changes which go on in the course of the formation of glycogen.

'Report on the Physiological Action of the Methyl Series,' by Dr. B. W. RICHARDSON.

'Report on the Investigation of Animal Substances with the Spectroscope,' by Mr. E. RAY LANKESTER.

'On the Homologies and Notation of the Teeth of Mammalia,' by Mr. W. H. FLOWER.  
 'On Flukes from the Indian Elephant, with Remarks on their Affinities,' by Dr. CORBOLD.

Remarks on their Affinities,' by Dr. COBBOLD.  
‘On some Effects of Extreme Cold on Nervous Action,’ by Dr. B. W. RICHARDSON.  
‘On the Physiology of Pain’ by Prof. ROLLESTON.

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**SECTION E.—GEOGRAPHY AND ETHNOLOGY.**

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**SECTION EIGHT** *THE UNITED STATES NAVY*

**President**—Capt. G. H. RICHARDSON  
**Vice-President**—Vice-Admiral Sir E. B. BILCHER  
Sir F. L. M'CLINTOCK, Sir C. NICHOLSON, Admiral E. OMANNEX, Sir A. PHAYRE, General Sir H. C. RAWLINSON, General Sir A. SCOTT WAUGH.

**Secretaries**—H. W. BATES, T. BAINES, C. R. MARKHAM,  
T. WATKINS.

**Committees**—H. BLANC, H. G. BOHN, Sir S. BIGNOLD, Capt. Lindsay BRINE, Dr. A. CAMPBELL, Dr. C. COLLINGWOOD, H. DENNY, M. D'AVENIA, Sir W. DENISON, R. DUNN, Gen. Sir VINCENT EYRE, Dr. GIBNSBURG, Rev. F. M. HELLAND, H. H. HOWARTH, T. J. HUTCHINSON, Capt. J. R. JONES, Capt. J. M. LEE, Capt. J. G. LEWIS, Capt. CHRISTOPHER NELSON, Prof. NEWMAN, Dr. O'BRIEN, Capt. W. GIFFORD PALGRAVE, R. M. PHIPSON, Col. STRANGE, W. SPOTTSWELL, Dr. T. THOMSON, Rev. DR. TRISTRAM, Prof. A. VAMBERRY, W. VINTON, C. WHITE, Prof. E. P. WRIGHT, Woods, E. WHYPER.

THURSDAY.

The PRESIDENT in opening the business of the Section said that it was not his intention to review the progress of geographical science and discovery, during the past year, but would confine himself to a few remarks on the present state and future prospects of exploration. A knowledge of geography was within reach of all, and it required no profound study to unravel its mysteries. But viewed in its various aspects geography concerned the common well-being, and was justly the most popular of the sciences. Maritime exploration had always been the precursor in the history of discovery; as soon as the coasts of a country were well known, then, according to various circumstances, a knowledge of the interior was developed with more or less rapidity. The work of the naval surveyor promotes the interests of navigation and intercourse between nations. Here geography trenches on hydrology, meteorology and the physical geography of the ocean. In connexion with the last-named it has become of such vast practical importance that fresh demands are continually made on it in the direction of exactitude in its observations. We now require to know the depths of the ocean, the nature of its bottom, its various temperatures, and its currents both on the surface and underneath the surface, all of which are branches of geography. Without a perfect knowledge on all these points it would have been impossible to have laid those sub-

marine cables which now connect this country with America. As soon as the requirements of commerce shall justify the outlay of capital these will be followed by similar cables encircling the whole world. A tie of this character is likely soon to be made between France and America and through the centre of the Mediterranean sea, and the time is not far distant when the connexion between India and China and Australia will be completed. By the aid of modern mechanical appliances we were at this moment making great progress in our knowledge of the depths of the ocean. Recent surveys, for instance, had shown that the maximum depth of the Indian Ocean between the Red Sea and Bombay was about two miles, and it was only within the last few days that he (the President) had learnt the results of a careful series of soundings that had been made between the Cape of Good Hope and the Island of Ascension, proving a maximum depth of less than three miles. There was no uncertainty about these results, and a most extensive suite of specimens of the deposits at these depths had been obtained by the naval surveyors. It was the intention of the Admiralty soon to publish physical charts of the Atlantic Ocean, to be followed by similar charts of the seas of the whole world; this work he considered second to none in the importance of its geographical results. Reviewing the blanks in our maps of the earth's surface remaining to be filled up by the enterprise of explorers, the first that might be named was that great neutral ground in Central Asia between the Russian and Indian boundaries. Much had been done in this region in recent years by Russian efforts and by the zeal of our Indian officers; and a few weeks since a traveller had left England, under the auspices of the Royal Geographical Society, to make further investigations in the least-known part of this great tract of country. In Australia nearly the whole of the vast interior still remained to be scientifically explored. The undertakings of individual labourers had been attended with incomplete results; the task, indeed, was too great for individual enterprise or for any enterprise not under the direct auspices of Government. The time had come when some combined effort should be made to wipe away what almost seems a reproach to British geography. A proposal had been recently discussed, made by Dr. Neumayer, a German *savant* long resident in Australia, for a well-organized expedition, in which the various sciences should be represented, to cross the continent from east to west; but the scheme must be taken up by Government, if it is to be properly carried out. With regard to the *terra incognita* of New Guinea the time is far distant when this vast and interesting country will be opened up. In New Zealand we had an example of rapid geographical exploration and coincident colonization without parallel. It was only some twenty years ago that Lord Auckland, then at the head of the Navy, fore-saw that the shortest mode of success in these islands was a complete exploration of their shores: this was undertaken under his auspices and completed within seven years. At the present time New Zealand throughout its length and breadth, was inhabited by Englishmen and Englishwomen, in the possession of the comforts and prosperity of an old and long-settled country. Turning to Africa—that fruitful country of geographical adventure and daring, the future of which concerns the happiness of many millions of the human race, and in which so much yet remains to be done—all our interest at present centres in Livingstone, who is now wandering, almost single-handed, in the great interior, in pursuit of the object to which his life has been mainly devoted. The search for knowledge with Livingstone was entirely subservient to the great aim and dream of his life—the extinction of slavery in Africa, and the regeneration of the African race. He had now been two years and a half on his present expedition, and had only once been heard of personally, and that was eighteen months ago, but long after the dastardly Johanna men had deserted and brought to Zanzibar the lying account of his death. In his letters, he spoke of the probability of reaching Lake Tanganyika in June (1867), on the shores of which—at Ujiji, a trading station—he was rumoured to have arrived in October last.

Up to the present time, however, no further news has been received of him, and this was naturally a subject of much anxiety to his friends. It was not clear that anything could be done in the way of searching for him, except by despatching a messenger from Zanzibar to Ujiji to ascertain whether he had been there; and this he (the President) thought ought to be done. Livingstone would know by letters waiting for him at Ujiji the results of Sir Samuel Baker's explorations further to the North, and, in all probability, he was now engaged in settling the unsolved problems regarding the great lakes and the sources of the Nile. In the Polar regions, a vast extent of the earth's surface still remained unknown. He (the President) believed the attainment of the North Pole perfectly practicable; indeed, had the efforts of the many expeditions despatched in search of Franklin been directed towards reaching the Pole, they would most certainly have succeeded. He regretted that the exertions of the Royal Geographical Society and of the Committees of the British Association appointed for the purpose had been unsuccessful in obtaining the organization of an expedition; but he must remind the meeting that it was not the business of the Admiralty to send an expedition to the North Pole. If there were an enemy to be reached there, Her Majesty's ships would certainly be sent to meet him; but a Polar expedition was the concern of the British public, and must originate with them. All our naval men, however, look upon Polar exploration as their inheritance, and hoped that England, who had borne the heat and burden of the day, would not be robbed of the honour remaining for that nation which should be the first to reach the North Pole.

'On the Physical Geography of the portion of Abyssinia traversed by the English Expeditionary Force,' by Mr. C. R. MARKHAM.—The region traversed by our military expedition forms a series of mountain and plateaux, extending north and south upwards of 300 miles, and forming the watershed between the Nile and the Red Sea. It is divided, with reference to the streams which form the sources of Egypt's fertility, into three distinct regions:—1. the region drained by the Mareb; 2. that drained by the Atbara; and, 3. that by the Aba, or Blue Nile. From the eastern flanks of these mountains only small torrents flow down, which are dried up by the scorching heat as they approach the Red Sea; while on the western side the rivers have long courses through deep valleys. But the Abyssinian highlands, though from their elevation of 7,000 to 10,000 feet above the sea, they enjoy a delightful climate, are not so favourably situated with regard to moisture as several other temperate regions within the tropics. But a small sprinkling of rain falls on the eastern coasts, opposite the arid wastes of Arabia, during the winter and spring months, when easterly winds prevail. Abyssinia has to look to the equator for most of her moisture, when the sun marches to the north, after having pumped up the necessary water from the Indian Ocean. Then, from June to September, she gets her rainy season; for her mountains are high enough to reach and condense the moisture that is hurrying northwards, and to bring it down to deluge and fertilize the plateau and valleys. As the clouds progress northwards much of their moisture has already been discharged, and the northern part of the country, which is drained by the Mareb, is consequently much drier than the more southerly provinces. The first part traversed by the British troops comprised the southern portion of the province of Akula-guzay and that of Againe. It consists of plateaux at an elevation of 8,000 feet above the sea; of mountain names and ridges rising to a height of 9,000 to 11,000 feet; of wide valleys surrounded by the plateaux, at a height of 7,000 feet, and of deep ravines and river-beds elevated from 6,000 to 4,500 feet above the sea. The plateaux are composed of sandstone overlying a formation of schistose rock, 4,000 feet thick, which rests on gneiss. Grand peaks rise from the plateaux, frequently with flat tops and scarped sides. The valleys, surrounded by the steep, scarped sides of the plateaux, are tolerably well-watered and yield good crops of grass and corn. One of these valleys is seen from the road

leading from Senafé to Adigerat, and well illustrates some of the most striking features of Abyssinian scenery. Just as peaks rise from the surface of the plateau, so hills rise up out of the valley itself, with sides exactly like those descending from the plateau, and with flat-topped summits corresponding exactly with the plateau level. One of these valley hills is the *Ambo* of Debra Damo, famous in Abyssinian history. The general effect of such scenery is most striking. It gives the idea of a dead level plain, which had been cut into by floods, forming ravines and valleys, but leaving portions of the plateau in their midst as islands, just as navvies leave earth-pillars to measure the depth of their excavations. The third great physical feature is the deep ravines and river beds, which carry off the drainage, on the one hand to the Mareb, and on the other to the coast. The deepest of these gorges are towards the Red Sea, and form the magnificent scenery of the passes. On leaving Adigerat the expedition entered upon the second physical region, drained by the affluents of the Atbara, and extending to the valley of the Taccazé. The northern half, as far as Antalo, consists of sandstone and limestone, the southern half wholly of volcanic rocks. The important mountain knot of Haral ends abruptly towards the south at a point about eight miles south of Adigerat, and divides the drainage of the Mareb from that of the Atbara. Looking at these mountains from the great plain of Haramat to the south, they appear like a mighty wall rising suddenly from the plain, bold sandstone cliffs with flat tops, surmounted here and there by truncated cones, with higher peaks in the interior of the mountain knot rising above them. At the southern end of the plain of Haramat the character of the country changes; there is a descent of upwards of 1,500 feet, and the scenery passes from a temperate to a dry sub-tropical type. A broken hilly country continues thence to the great stony plain of Antalo. The country between Antalo and Magdala is a mountainous region entirely composed of volcanic rock, but it is divided into two very distinct parts by the river Taccazé. That to the north is an elevated ridge, crossed by several lofty ranges of mountains; that to the south is a plateau of still greater height, cut by ravines of enormous depth. The latter is drained by the principal affluents of the Blue Nile. South of Antalo the scenery becomes grander, the vegetation more varied and more abundant, and the supply of water more plentiful. The peculiar feature of the whole region is that, while the backbone of the mountain-system runs north and south, it is crossed by ranges of great elevation running across it in the direction of the drainage and dividing it into sections. The mountainous country between Makhon and the basin of Lake Ashangi is about fourteen miles across. It is well wooded, the hill sides being covered with junipers as tall as Scotch firs, flowering St. John's-worts growing as trees, and a heath with a white flower. The view from the southern edge of this highland is magnificent. Far below lies the bright blue lake of Ashangi, bordered by a richly-cultivated plain and surrounded by mountains on every side. The lake is without an outlet, although lying on the edge of a vast extent of country at a much lower elevation. It is some 4 miles long by 3 broad, and lies 8,200 feet above the sea level. As the water is fresh, the outlet is probably obtained by percolation at some point on the eastern side. The part of the Lasta province south of the lake is broken up into a succession of mountain spurs and deep ravines, fertile and well-watered. South of the Taccazé the nature of the country again entirely changes. A mighty wall rises up, 2,600 feet high, and ends in a level summit, forming the edge of the Wadela plateau. With the exception of clumps of kosso and juniper round the churches, Wadela plain is without either trees or shrubs. The scenery is wild and desolate, not unlike that of the interior of the Orkney Islands. The Jidda river separates the Wadela from the Dalanta plateau. The height, where the river separates them, is about 9,200 feet; and it seems evident that they formed once a single mass of columnar basalt, through which the Jidda, in the course of ages, has gradually worn its way down to a depth of 3,500 feet, carrying countless millions of tons of earth away to

fertilize the plains of the Lower Nile. The Flora on the Dalanta plateau is very English, consisting of dog-roses, the nettle, yellow and purple composite, clover and plantain. The ravine of the Bechilo, on its southern edge, is even deeper than that of the Jidda, being only 5,640 feet above the sea. To the south of the Bechilo rises the Magdala system, or knot, of mountains. Magdala itself is a mass of columnar basalt, with scarped perpendicular sides, and with a plateau on the top, about two miles long by half a mile wide. It is 9,050 feet above the sea level. Besides Magdala the system is composed of the peak of Selassie and the plateau of Fala; the three being connected by saddles at lower elevations. They are not in a line, but form an angle, of which Selassie is the apex and Magdala and Fala the two legs. The Magdala district is simply a portion of the great basaltic mass of Dalanta, which has been cut up and furrowed by the action of water during many ages, leaving the hills as isolated bits of the original plateau.

'On the Native Races of Abyssinia,' by Dr. H. BLANC.—Isolated by the arid regions which surround it, the elevated region of Abyssinia forms a gem apart in torrid Africa, the perfection of a temperate and healthy climate. The people of Abyssinia are a mixed race, the offspring of divers invaders; and it is doubtful if such a thing as a pure specimen of the primordial Abyssinian race at present exists. The Shankalas, a negro tribe who dwell in the woods of the low country on the north-western frontier, are certainly not that race. They are a dark-skinned, woolly-haired, flat-nosed people, ignorant and fetish-worshipping, clad in the skins of animals and armed with the club. It was not probable that they were originally inhabitants of the highlands, driven to the malarious jungles which constitute their present abode by a superior race of invaders. The oldest records represent the Abyssinian race as powerful, enterprising, and possessing a civilization superior to that of other African peoples; and it is probable they have since degenerated from their ancient condition. The Abyssinians of the present day are a mixed race, in which the Arab, Jewish and Galla elements are more or less combined. The first of the divisions of the race admitted by themselves is the Amhara, a word which serves to designate the majority of the population. The Ambaras are all Christians. They are a handsome and prepossessing people, well proportioned and with large heads, in which there is but a slight preponderance of basilar development. The face is small in proportion to the cranium,—the eyes large and black, but somewhat devoid of expression,—the nose straight, or slightly curved,—the lips small, often rosy,—the beard generally scanty,—the teeth white and even,—the hair coarse, curly, sometimes woolly and sometimes long. The hue of the skin varies from dark brown to a dirty yellow. The language is an impure *Geez*, with a mixture of Arabic and Galla words. The people of Tigré inhabit the greater portion of the northern provinces. They differ but slightly from the Ambaras; the head and face are somewhat longer,—the teeth more irregular, long and prominent,—the eyes smaller and brighter,—and the face more angular; the hair, especially of the women, is longer and finer. They are generally darker than the Ambaras, and the Tigré dialect has still more connexion with *Geez*. The people of Lasta seem to combine the best points of the Ambaras and Tigré nation; although they are below the middle height they are remarkably well made, and notorious for their strength and agility. They speak the Tigré dialect. The people of Shoa as a rule are darker and taller than the Ambaras, but speak the same language. In Tigré and Shoa a large portion of the people are Mohammedans. Besides these four sections of Abyssinians there are several separate tribes. Of these, the *Falashas* are the most important; they are found in great numbers in Wolkait, Wagara, and Koura, and are undoubtedly of Jewish descent. To this day they have retained many of the customs of their race, observing the Sabbath and being very particular in their food and other observances of the Mosaic law. Another tribe are the *Kainawites*, a peculiar people inhabiting the district at the north-western extremity of Lake Tana. They re-

semble in appearance the Falashas, and are not improbably a derivation from the same tribe. They observe the Jewish Sabbath, and retain some of the Jewish prejudices. Although they have a sacred language of their own they speak Amharic. They are a quiet and inoffensive people, but so brave in the defence of their homesteads and sanctuaries that they are but seldom molested by their crafty but cowardly neighbours the Amharas. A third tribe are the Agaws, who are of Galla origin, and inhabit districts at the southern end of Lake Tana and to the westward of Lasta. They are fairer in skin than the Amharas, have handsome features and are remarkable for the delicate form of their hands and feet, and for the fine texture of their hair. The land of the Agaws, bordering on the district of Damot, is one of the finest provinces of Abyssinia. These Agaws form a wealthy and powerful tribe. When Mr. Rassam's mission (of which the author was a member) passed through their country their hospitality knew no bounds, and their amiable and courteous manners and pleasing smiling faces will ever be remembered. Although they have Christian churches and priests they are not looked upon as orthodox by the Amharas. They are a courageous people in defence of their homes, and the Emperor Theodore always took care to leave them alone. A fourth people, the Zalans, are rather a caste than a tribe; they inhabit Dembea, isolated in small villages, tending their herds of cattle, and are uncouth in appearance. The Waitos, a fifth tribe, inhabit the shores of Lake Tana, and are despised on account of their predilection for the flesh of the hippopotamus. They are expert fishermen and ply the lake in their bulrush canoes. Their hair is short and woolly, but they have no further resemblance to the negro Shankas. A sixth tribe, the Figenes, inhabit a well-wooded country south of Lake Tana, abounding in elephants, which they hunt and bring the ivory twice a year to the markets of Godjam. A seventh and last tribe are the Wallo gallas, a large, wealthy and powerful tribe inhabiting the fine plateau that extends from the Bechilo to Shoa. They came originally from equatorial Africa about the middle of the sixteenth century, and are a brave race, professing the Mohammedan religion. Now that their great enemy Theodore is no more, they bid fair to overrun Abyssinia and impose on the debauched and sensual Christians the false creed of the Koran. There is nothing to praise in the character of the Abyssinians in general. Beggars infest the land; the priests are ignorant and bigoted. The people are adepts at low treachery, lazy, pretentious and pompous. If their timorous nature made them recoil from the daring act of murdering the white men, their guests, they enjoyed at least for a while the idea of their importance, and swaggered, full of pride, before the few helpless individuals their king detained in captivity and in chains.

'On the Peninsula of Sinai, and its Geographical Bearings on the History of the Exodus,' by the Rev. F. W. HOLLAND.—The author had twice wandered through the Peninsula of Sinai on foot, tracing its wadys, chiefly with a view to ascertaining the route of the Israelites. In his paper he discussed, in the first place, the evidence for fixing the position of Mount Sinai itself. The long range of Jebel Th, forming a remarkable barrier across the peninsula, enabled us to decide that the Mount must lie to the south of this line; and within this limited region the claims of the three mountains had been advocated. Of these, the first, Jebel Odjnech, in no way met the requirements of the Bible narrative, being a mountain not apart from others round which bounds could be placed. The second, Jebel Serbal, was excluded by reason of its having no plain before it, and being approachable only by narrow, rocky wadys. The third, Jebel Musa, the "mountain of Moses," standing alone and rising abruptly from the plain of Wady Er Rahar, seemed to answer most of the requirements. Yet there are many who believe that the plain in front of it, which is only two miles long and scarcely half a mile broad, is too small for the encampment of the Israelites. The author was surprised last year to discover another plain, very similarly situated, at the foot of an imposing mountain, which was at least four miles broad and seven miles long; and this, being only eight miles distant

from Jebel Musa, is a striking proof of how little we yet know of the topography of the country. This plain is called Wady Seuned, and its mountain Jebel Um Alowee. Up to within the last five miles, the road which leads both to Jebel Musa and Jebel Um Alowee is identically the same; so that the discovery of the rival mount will in no way tend to unsettle any opinions that may be formed with regard to the previous route of the Israelites. The author next described the situation of Rephidim, which he believed he had satisfactorily determined to be at a spot about twelve miles to the north of the two mounts, where there is a narrow pass through a granitic range, formed by the Wady Es Sheikh, suitable as the post of defence of the Amalekites. All the requirements of the scriptural account of the battle of Rephidim were found at this spot. With regard to the route of the Israelites before reaching this point, the author had come to somewhat different conclusions from former travellers and writers. He believed that a large plain called Es Seyh, south of Jebel Th, extending for a distance of nearly thirty miles, was the *Wilderness of Sin*; the distance from the southeastern end of which to Rephidim was about thirty miles, and would correspond with the three days' march of the Israelites. Along this they marched after their journey along the sea-coast as far as Wady Ghurundel, and inland round the headland of Jebel Humman to Wady Useit. The author had arrived at the conclusion that no great change in the features of the peninsula of Sinai had taken place since the remote period of the Exodus.

#### SECTION F.—ECONOMIC SCIENCE AND STATISTICS.

*President*—S. BROWN.

*Vice-Presidents*—Sir J. LOUGHREY JONES, Sir S. BIGNOLD, Sir J. BOWRING, Dr. FARRELL, W. NEWMARCH, PROF. ROGERS, R. J. H. HARVEY, J. HEYWOOD.

*Secretaries*—Prof. LEONI, LEVI, E. MACROBY, REV. W. CUFAYDE DAYIE.

*Committee*—H. G. BOHN, W. CANN, REV. W. H. CHAMING, J. J. COLMAN, H. DIRCKS, F. P. FELLOWS, J. G. FITCH, REV. CANON GIRDLESTONE, REV. G. GOULD, W. D. HARDING, DR. HODGSON, E. HOWES, DR. R. J. MANN, REV. F. MEYRICK, J. NEWBIGIN, C. S. READ, REV. H. PADRE SECCI, DR. STORRAX, R. WILKINSON.

#### THURSDAY.

The PRESIDENT delivered an Address on the Progress of Economic Science.

'On Mr. Seely's Proposed Form of Admiralty Estimates' Accounts as recommended by the Naval Committee of the House of Commons,' by MR. F. P. FELLOWS.

'A Brief Statement of the Recent Progress and Present Aspect of Statistical Inquiry in relation to Shipping Casualties,' by MR. H. JEULA.

'On the Progress of Learned Societies illustrative of the Advancement of Science in the United Kingdom during the last Thirty Years,' by Prof. LEONE LEVI.—Prof. Levi drew attention to the number and description of our learned societies, and to their progress, as a sure indication of the advance of science. A scientific census could

not be taken by the number of their members, many men of the highest scientific attainments not belonging to them; many who have several initial letters attached to their names being rather the patrons than the cultivators of science; and many belonging to several societies; yet the Professor estimated that the total number constitutes about 15 in every 10,000 of the population directly occupied in the cultivation or promotion of science, whilst the resources of such societies amounted collectively to 4L. to every 10,000 of the national income charged to income-tax; such facts contrasting most favourably with the time when Mr. Babbage wrote his 'Reflections on the Decline of Science in England,' and when the British Association was first formed, in the year 1830. Having dwelt at length on the circumstances attending almost every scientific society in the United Kingdom, from returns made by the societies themselves in answer to a circular he issued, the Professor concluded his observations with the following statement:—

- That during the last thirty years there has been a large increase in the number and membership of learned societies in the United Kingdom: a fact indicative of a decided advancement of science.
- That, classified into distinct groups, the membership of learned societies has advanced in the following ratio:—

	Increase per cent.	Decrease per cent.
a. The Royal Societies of London and Edinburgh, and Royal Irish Academies .....	—	—
b. Mathematical and Physical Sciences—Statistical, Mathematical, Astronomical, Chemical, Meteorological, and Geological .....	—	—
c. Biological and Natural History—Ethnological, Anthropological, Entomological, Zoological, Linnean, Horticultural, Botanical, and Agricultural .....	179	—
d. Geography and Archaeology—Geological, Antiquarian, Archaeological, Historic, Architectural .....	48	—
e. Applied Science—Society of Arts, Engineers, Architects, Pharmaceutical, Medical, Actuaries, United Service .....	373	—
f. Miscellaneous Sciences—Royal Asiatic, Philological, Microscopical, Numismatic .....	453	—
g. Scientific and Philosophic Institutions .....	82	—
h. British and National Associations .....	149	—
Total average increase .....	172	—

3. That there are at present upwards of one hundred and twenty learned societies in the United Kingdom, having in the aggregate upwards of 60,000 members; and a deduction made for members belonging to more than one society, upwards of 45,000 persons engaged or directly concerned in the promotion of science, with a collective income of upwards of £130,000. 4. That it seems desirable to render the published *Transactions* of such societies as complete as possible, by the addition of a summary of the discussions which arise out of the reading of scientific communications and papers.

5. That considerable advantage and economy would result by locating several societies in the same buildings, the members having mutuality of privileges, especially as regards the use of large rooms for meetings, and the common use of the libraries. 6. That the councils of all the learned societies should annually meet together to consider the state of science, and the relation of each to education and legislation. 7. That the relation of the state of the learned societies, grants being made to some, and house accommodation being afforded to others, does not appear to proceed on any well-established principle. 8. That the institution of a medal to be annually granted to distinguished merit, appears from the experience of some societies well calculated to afford stimulus to the pursuit of science. 9. And that a united meeting of the members of all learned societies should be held for the presentation of such medals, and for the greater encouragement to science, in the "Royal Albert Hall of Arts and Science," now in the course of construction, as a memorial to that munificent patron of science, who with so much wisdom and dignity presided over one of the meetings of the British Association.

#### SECTION G.—MECHANICAL SCIENCE.

*President*—G. P. BIDDER.

*Vice-Presidents*—J. E. BATEMAN, ADMIRAL SIR E. BELCHER, W. FAIRBAIRN, C. HUTCHINSON, T. HAWKESLEY, J. NASH, PROF. W. J. MACQUORN-RANKINE, C. VIGOREUX, J. WHITWORTH, PROF. WILLIS.

*Secretaries*—P. LE NEVE, FOSTER, CHARLES MANLY, J. F. SELBY.

*Committee*—R. ABERNETHY, PROF. T. ARCHER, THE DUKE OF BATH, F. J. BRAMWELL, W. O. CHAMBERS, E. A. COPPER, COL. SIR W. DENISON, H. DIRCKS, GENERAL SIR VINCENT EYRE, CAPT. DOUGLAS GALTON, JESSOPP, R. B. GRANTHAM, T. LOGAN, R. MAILE, C. W. MERRIFIELD, A. NOBEL, J. OLDHAM, C. F. SALT, C. W. SIBLEY, W. SISSONS, J. P. SMITH, W. THOROLD, W. W. URQUHART, GENERAL SIR A. SCOTT, WAUGH, T. WEBSTER, E. WOODS.

#### THURSDAY.

The PRESIDENT delivered the opening address. He said the leading object of the Association was the application of science to the great objects of life, and the special object of this committee was to consider the application of the laws of mechanics to all mechanical operations for the benefit of human kind. In mechanics they had this advantage, that the laws they applied were certain, and that their application must be productive of benefit to mankind in general. He proposed on the present occasion to touch upon several topics which were engaging public attention; and first he would deal with the great water question. He congratulated the committee on the presence of several of the most eminent authorities on this question, among whom were Mr. Hawkesley and Mr. Bateman, from whom doubtless the Section would be enabled to derive some valuable information before it broke up. The question of the supply of water to towns,

and its ultimate purposes, and its pollution, sewage of importance sensational belonged. India, America, at those of governed that the great water mountains through their bank conveying to place. The amount to tains of C per annum the rainfall had been on one actually for one of sc Association them in narrow rivers; t panying this kind a most va of engine a referent The West Norwich Reedham harbour there was but that which fo narrow Formerly Mutford of some incursion it was co between N a fall of was attested the water and the depth of destroy material river for day a The wa laws, al the can arose and rise to m litigation existent that the Lynn N spring. The tide and occu bar and the tide each si produce of the and ho ease of might collecti Yarmo as the similar by the of the differ of the been to district

and its utilization for manufacturing and other purposes, as well as the requisite means to prevent its pollution by the refuse of manufactories and the sewage of towns, was one of great interest and importance, and might be said to constitute the sensational literature of the profession to which he belonged. Whether they looked at the rivers of India, America, and the continent of Europe, or at those of this country, they would find them all governed by the same general law. It was found that the greatest rainfall took place in high regions, the water finding its way down the sides of the mountains, and forming the rivers which flowed through the valleys below, supplying the towns upon their banks, and affording a valuable means of conveying the products of commerce from place to place. The rainfall in the Himalayas was said to amount to 400 inches per annum; in the mountains of Cumberland the rainfall reached 200 inches per annum, while in the neighbourhood of Norwich the rainfall was only twenty inches per annum. He had been told by the late Robert Stephenson that on one occasion in the Ganges eight inches of rain actually fell within half-an-hour. The subject was one of so much importance that he thought the Association ought to ask the Government to aid them in making investigations as to the quantities of water falling along the courses of the different rivers; the amount of rainfall at different intervals; and the meteorological phenomena accompanying the different rainfalls. Observations of this kind taken over a series of years would furnish a most valuable collection of data for the guidance of engineers. He might illustrate these remarks by a reference to the rivers in this neighbourhood. The Wensum and the Yare converged a little below Norwich; they were joined by the Waveney below Reedham, and by the Bure, which flowed into the harbour at Yarmouth. There was little doubt that there was formerly a great estuary at Yarmouth, but that the water had been confined by the sands which formed the dunes along the coast into the narrow channel which flowed through Gorleston. Formerly, he believed, the Waveney flowed through Mutford lock, a dam erected under the advice of some Dutch engineers in order to prevent the incursions of the sea; but however this might be, it was certain that the whole flow of the river between Norwich and Yarmouth was maintained by a fall of between four and five inches. This fact was attended with great advantage to the district; the water did not contain much matter in solution, and the gentle flow of the river maintained a good depth of water for the navigation, and did not destroy the banks, which were composed of a soft material. Such was the facility afforded by the river for navigation, that the wherries plying between Norwich and Yarmouth maintained to this day a wholesome competition with the railway. The waters of the various rivers were subject to laws, about which there could be no doubt until they came into contact with the tide, and here arose an element of discussion which had given rise to much diversity of opinion, and even to some litigation. Yarmouth was surrounded by a vast extent of sand, and the consequence of this was that the tide on both sides, at Aldborough and the Lynn Estuary, rose from 16 to 18 feet at the spring, while it only rose 5 feet at Yarmouth. The tidal scour at Yarmouth was greatly reduced, and occasioned a large outlay in maintaining the bar and extending the draught of water. But if the tide were as high at Yarmouth as it was on each side, it was doubtful whether it would not produce disastrous results. As to the maintenance of the bar, and how much was due to the river and how much to the tide, there was much difference of opinion; and he thought the Association might aid in the elucidation of the question by the collection of accurate data from the authorities at Yarmouth and Lowestoft. He would suggest that, as the Association was to meet next in Exeter, similar information should be obtained beforehand by the Association as to the condition of the mouth of the Exe, and the effect of the tides on the different works there. The result of the convergence of the rivers he had mentioned at Yarmouth had been to give that port a monopoly of the trade of the district, and so injurious was this monopoly that

forty-three years since the late Sir William Cubitt obtained an Act of Parliament for the construction of a harbour at Lowestoft, the capital for which undertaking was mainly provided from the city of Norwich; but the money subscribed was insufficient to carry out the works on that scale which would enable the harbour to be used to any great extent; and until the railway took it up and made Lowestoft what it now was, the full advantages which Yarmouth could give to the district had never been realized. The Yarmouth people then set about improving their harbour and ameliorating the port-charges, the result of which was that great advantage had been reaped by Norwich and the surrounding districts. There were now two harbours within a few miles of each other constituted on totally different principles—that of Yarmouth being maintained by the flow of water from the land, while that of Lowestoft was maintained partly by dredging, there being no land water, except a little that entered the harbour through the unlocking for vessels. His belief was that the result of a thorough investigation, conducted by competent persons, would show that the land-water gave very little advantage to the port of Yarmouth, and that if the rivers were allowed to pass through to the sea in other directions, a large area of land situated in their neighbourhood, which was now rendered unproductive by the flood and tidal waters, might be utilized.—The next topic connected with the water question which he should notice had reference to an undertaking that had excited great attention throughout the world—the Suez Canal, which was now approaching completion, and the success of which would doubtless afford gratification to all right-minded men. That canal passed through what was called the Bitter Lake, which was situated in a depression of the land forty feet below the level of the Red Sea. The lake was dry, and would have to be filled by the waters of the Red Sea, which was distant about eighteen miles. The area of the lake was stated by the French to be 500 million square yards, or about 150 square miles; and as the evaporation of water in Egypt was at the rate of one inch per diem, it would amount over the area of the lake to 3,600,000,000 cubic feet per diem, or 2,500 feet per minute. The water of the Red Sea was depressed by the northerly winds about nine months out of the twelve, and the southerly winds caused the water to rise about five feet. Now, he thought the Association should endeavour to get information as to all the phenomena that might attend the filling of the Bitter Lake. The enormous evaporation of one inch per diem, which was equal to a rainfall of 365 inches per annum, could not but exercise some influence on the atmosphere of the surrounding district, and this ought to be carefully watched, and the most accurate observations taken.—The next topic to which he would advert was the state of our Navy, some of the departments of which were certainly not in a condition that was altogether satisfactory to the country. He believed the only desire in this country was that we should have the very best ships that were obtainable; but he thought that every one who understood the subject would agree with him that before any vessel was built, her speed and other qualities ought to be determined. This rule ought to be applied to the Navy, so that the combined operations of a fleet might be carried out with more certainty than could otherwise be attained. In fact, the speed of all the ships in a fleet ought to be as nearly the same as possible; and this question of speed was highly important, and should be the first consideration, for it would be of little use to arm a vessel with the best guns and the strongest iron plates if she were unable to come within range of a swifter though weaker vessel. The battery of a ship ought to be so placed that the utility of the guns might not be interfered with. Her amount of rolling should be previously ascertained, and he believed that the law regulating the rolling of a vessel could be determined by mathematicians. These things certainly ought to be ascertained before a quarter of a million was expended on a new vessel. He did not think it creditable to the Admiralty or to the constructor of the navy that ships were sent to sea before it was known how much or how little

they would roll. With regard to the ability of vessels to go easily through a heavy head-sea, that would depend on the disposition of the weights; and it often happened that this circumstance accounted for a reversal of the relative speed of vessels in smooth and in rough water. In fact, no smooth-water test was sufficient to show the speed of a vessel, and every ship ought to be tested at sea, under the direction of a commission of independent and competent persons. As to the protection to be afforded to a vessel by armour-plating, he thought that this should be made subservient to speed and steadiness; and, with regard to propulsion, he thought that before the country expanded a large sum on a new system, as had recently been the case, its utility ought to be ascertained, and it should not be a matter of doubt whether it involved the most economical or the most wasteful application of fuel. With respect to our coast defences, he was one of a corps of volunteers who had been considering this question with a view to advising Her Majesty's Government thereon, and the first question they had to consider was the defence of East Anglia, the coast of which was undoubtedly the most easily accessible to an enemy of any portion of the kingdom; but, without betraying confidence, he might state that it could, by the adoption of judicious means, be easily defended, and that, too, without the erection of the ponderous forts which had been constructed on the southern coast. The advance in the science of gunnery had almost put an end to the embrasure system, and it was found that men were safer in a line of open country than when crowded into a given point between embrasures, where the fire of powerful artillery could be concentrated upon them. He thought it highly necessary that the whole question of the application of gunpowder to gunnery should be thoroughly considered and absolutely determined.—The President next turned to the subject of telegraphy, and having alluded to the Indo-European telegraph, in the completion of which Mr. Siemens was engaged, he expressed a hope that before long this country might obtain an entirely independent line of telegraphic communication with India by way of Gibraltar and the Cape. In conclusion, he referred to technical education, arguing that attention should be chiefly directed to the branch which the student intended to make his pursuit in after life, and that the basis of this education should be a sound knowledge of the laws of mechanics.

'Report of the Committee on Steam-Ship Performance.'

'On a Probable Connexion between the Resistance of Ships and their Mean Depth of Immersion,' by Prof. J. W. MACQUORN-RANKINE.—The author, after referring to previous researches of his own and of Mr. Scott Russell in relation to waves, stated that the object of his paper was to call the attention of the British Association, and especially the Committee on steam-ship performance, to the probable existence of an element in the resistance of ships hitherto neglected; viz., that every ship is probably accompanied by waves whose natural speed depends on the virtual depth to which she disturbs the water, and that, consequently, when the speed of a ship exceeds that natural speed there is probably an additional term in the resistance depending on such excess. The author suggests that suitable observations and calculations should be made in order to discover its amount and its laws. Amongst observations which would be serviceable for that purpose might be mentioned, the measurement of the angles of divergence of the wave ridges raised by various vessels at given speeds, and the determination of the figure of those ridges, which were well known to be curved; and amongst the results of calculation the *mean depth of immersion* as found by dividing the volume of displacement by the area of the plane of flotation; and that not only for the whole ship, but for her fore and after bodies separately, it being probable that the virtual depth of uniform disturbance, if not equal to the mean depth of immersion, is connected with it by some definite relation.—In an appendix, the author gave the results of three observations he had been able to make; and, few as they had been, he thought they were sufficient to prove the existence of waves

whose speed of advance depended on the depth to which the vessel disturbs the water. The connexion between these waves and the resistance remains for future investigation.

'On the Necessity for further Experimental Knowledge respecting the Propulsion of Ships,' by Mr. C. W. MERRIFIELD.—He began with a short review of what was already known on the subject of the law of the resistance to which a ship was subjected by its having to force its way through the water. He showed that although there was a general consent that the resistance varied, with a certain degree of approximation, according to the law of the square of the velocity, yet there was abundant proof that that law was inexact, and that the nature and causes of this discrepancy, although much discussed, were still in need of experimental determination. He considered that the first requisite was to have the direction and velocity of the currents of water which accompany a ship's motion determined by actual observation. For this purpose he submitted to the Section a rough scheme of experiments, which, however, he wanted to get corrected by the experience of a Committee of the Association. He suggested that a vessel of the corvette class should (at separate times) be towed, and also driven by her own screw, instruments being used to measure both the power employed, the speed of the vessel, and the velocity and direction of the accompanying water, at various rates of speed. He pointed out serious difficulties in ascertaining the direction of the currents of water, and was unable to suggest for this purpose anything better than direct vision. He exhibited certain instruments for assisting the eye in looking through the disturbed surface,—one of them being a common water-glass, a simple trumpet with a sheet of plate glass at the bottom, which was dipped below the water; the other being Arago's scopeloscope. He also described an electrical log, patented by M. Anfonso, of Mende. But he thought all these things required further consideration. He proposed to apply for a Committee of the Association to discuss the subject, with a view of considering what experiments might best be made; and if the Committee were of opinion that satisfactory results might be expected from such experiments, then to memorialize the Admiralty to detail vessels and officers for the purpose of carrying them out in the course of the summer.

'Description of a Ventilating Fire-Place, with Experiments upon its Heating Power as compared with that of ordinary Fire-Places,' by Capt. D. GALTON, C.B.—By means of very simple arrangements, described by the author, but which are unintelligible without diagrams, the rooms are heated by an open fire-place of an ordinary character, whilst the heat which would otherwise be lost in passing up the chimney is utilized in warming a current of fresh air from without, brought in for the supply of the room. The author stated that it was now largely used in barracks, and its introduction had been attended with marked benefit both for the health and comfort of the troops. Upwards of five thousand had been erected in various places and were now in use, and it was no longer an experiment. The stove was not expensive, and the arrangements could be adapted to existing buildings.

#### FINE ARTS

##### A CAMPO SANTO AT WESTMINSTER.

We believe more than a hundred years have passed since the idea was first started of relieving the crammed aisles, nave and chapels of Westminster Abbey of their most unsightly monuments, by placing many of those among the memorials which time has sanctioned in a proper Campo Santo of the dead. The monastic custom of the Abbey and like establishments indicated selection as a rule for the interments of such as were worthy of burial in the place at all: thus, the church was reserved for very distinguished personages, and its parts were graded in honour; none but founders, or such as were as good as founders, great beneficiaries and very holy personages, found their last earthly homes in the choir. Kings lay at the altar: such was the

position of the first grave of the founder of Westminster Abbey, that peculiarly foolish monarch, Edward the Confessor. When the royal tomb-chapel was built in the rear of the altar, and this Edward's body enshrined in the centre, it was so disposed in order to form the shrine of a canonized saint, as well as the tomb of a regal founder and extraordinary beneficiary. The Confessor's Chapel, as it is still called, was the first royal tomb-house in England, and such kings as found graves there were placed in order round the shrine: Henry the Third, the second founder, lying on the right of the Confessor; Edward the First, another great builder there, at his father's feet; so on with Queen Eleanor, Queen Philippa, Edward the Third, Richard the Second, who chose his own grave, Anne of Bohemia, Henry the Fifth, to whom a special chantry was erected over his tomb, right in the "eye" of the Abbey, and the Lady Chapel and the shrine of the Confessor. A considerable time elapsed before a person not the actual wearer of the crown was admitted to a grave in this chapel; the very children of the blood-royal were, however fair and innocent, excluded: thus Catherine, the dumb and beautiful princess, the five years' old daughter of the great builder, Henry the Third, although so deeply loved that her death brought haughty Eleanor of Provence, her mother, and the King to pitiable states of grief, was not buried in the Chapel of the Confessor, notwithstanding that a silver image of the princess's namesake and tutelar was thought not too great an adjunct to her own young figure in bronze upon that tomb in the south ambulatory, which yet retains its mosaics, and is one of the most interesting mortuary relics in England.

It must be a very hard thing for the digestion of those popular writers—one of whom appeared but the other day—who join the prejudiced against English Art, of whom Walpole long stood at the head, to know that Master Simon of Wells, in the 56th of Henry the Third, 1271, was paid five marks and a half as his expenses in going to London for the "brass image" for this little Princess's tomb. Master Simon of Wells will doubtless be admitted as an Englishman, a sculptor of repute, and not unworthy of the office in question; since he was selected by a King who was a very good judge of Art, and might have employed a foreigner if he pleased. We may, therefore, conclude that a man so named was a capable English sculptor, notwithstanding the absurd reluctance of many to admit that Art was practised in this country, and who even call William Torel an Italian, for no other reason than that he was employed to make the effigies of the Queens Eleanor of Provence and of Castile, and Henry the Third himself. These thoughtless persons, rather than have a countryman capable in sculpture in the thirteenth century, will make Torel—a name known here since the Confessor—into Torelli, and an Italian. They aver that, as he was certainly a fine sculptor, he could not be an Englishman. No one supposes the sculptures on the west front of Wells Cathedral to be the work of foreigners; yet they were wrought about 1214, long before Master Simon was sent for from the same ancient city to see to the effigy of the dumb Princess for Westminster Abbey.

This effigy was, as we have written, placed, not in the Royal Chapel, but in the ambulatory; John of Eltham, the King's brother, had to lie outside. When Alphonso, the darling son of Edward the First, died, a grave was, indeed, found for him between the resting-places of his brothers and sisters, at the head of the Confessor's shrine; and the rich fragment of mosaic now lying under the step before the tomb of Henry the Fifth is supposed to belong to this young Prince's monument. Edmund Plantagenet, "Crouchback," Earl of Lancaster, the second founder's own brother, was "well done by" when he was allowed to lie on the right of the high altar, *outside* the chapel of the Crowned. Blanche de la Tour and her brother, William of Windsor, dying young, were interred in no better place than John of Eltham, their uncle—i. e. in one of the chapels of the chevet. One of the chief complaints against Richard the Second was, that he had permitted the grave of his Treasurer, Keeper of the Privy Seal, and Master of the Rolls, John of Waltham, Bishop of Salisbury, to

be made in this chapel, 1395. He was the first person not of the blood-royal interred in this chapel, although a century and a quarter had passed since it was built.

The like strict order was observed with regard to other parts of the Abbey church; and even the abbots of early date found graves in the cloisters; while their monks were buried outside, in the cloister garth. This rule of selection has been abandoned for centuries. Anybody whose relatives would pay sufficiently well might have what might be called a lease of a grave; freeholds in perpetuity were in many cases scarcely expected. Thus Walpole, writing of the monument of his mother, declares that the interior of the church must have been let over and over again to the dead in temporary tenancy. This is very much to be lamented, and is unworthy of the place; yet, such is fashion, the influence brought to bear upon the Deans of Westminster seems to be irresistible, and abundance of the temporarily famous are crowded into the already-crammed spot. It is admitted by the custodians that "only a few more eligible sites" remain even for the placing of busts. Brasses have been resorted to "to make room," so to say. Memorial windows were accepted as the fruit of "a capital idea," and with a view to the enlargement of opportunities which must come to an end some day.

This being the case, and the rule of selection having been of yore rigidly adhered to, we cannot but hope that the appeal of Dr. Stanley may find hearers, and a fit *Campo Santo* be erected in place of many inferior tenements which are neighbours to the Abbey. Here the absurd monuments, such as those of Admiral Tyrrell and General Wolfe; those that are offensive, such as the Nightingale monument; and the scores of monstrous loads of marble which dishonour the architecture, might find places. Some time since we noted that there need be no sentimental reluctance to the removal of the greater number of the incongruous memorials, because, strange to say, the most offensive among them are cenotaphs. Thus Wolfe was buried at Greenwich, and Admiral Tyrrell was sunk in the sea. That "amiable spy" Major André might, without harm, have his claims revised to a monument in the building where Blake's glorious memory could neither retain a grave for his bones nor achieve for his honour a memorial.

#### FINE-ART GOSSIP.

St. Swithin's Church, Cannon Street, is under repair, the interior is to be improved by removing the high, old oaken pews and placing stalls in their stead. London Stone, the distinctive mark of this church, is to be further protected by a light iron railing of ornamental character. We trust this railing is to be in keeping with the casing in which the stone has stood so long, and was designed, we believe, by Wren, although it does not follow because he built the now adjoining church that this small work should really be his. It originally stood on the south side of Cannon Street, and had no connexion with St. Swithin's Church until in 1798 Mr. Thomas Marden, printer, of Sherbourne Lane (honour to his memory!) persuaded the churchwardens (may their memories be maintained!) who proposed to destroy the relic, rather to place it where it now is. It stood close to the kerb on the same side of the way from 1742 until 1798, and was removed from both situations as a nuisance:—proceedings which may be justified by Stow's account of the matter: "On the south side of this high street, near unto the channel, is placed a great stone called London Stone, fixed in the ground very deep, fastened with bars of iron, and otherwise so strongly set that if carts do run against it through negligence, the wheels be broken and the stone itself unshaken."

The finishing stroke has been put to the twenty years' labour of restoring Notre Dame, Paris; this final operation was the placing a railing round the exterior of the building.

A writer in the *Chromolithograph* gives the following account of the interior of the Cathedral of St. Sophia at Lefkosia, the ancient capital of Cyprus. It is suggestive of the advantage of further

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researches in this little-known island. The structure is Gothic, of the twelfth century:—"The exterior, covered with rich though much-defaced tracery, reminded me of some of our old fanes. Being the chief mosque, we were invited to enter, but were at the same time informed that, although the place was holy, we need not remove our shoes from off our feet. The interior presents a naked and neglected appearance, the walls loaded with whitewash, which hides the tracery on the capitals of the short massive columns which support the sides, the emptiness of the place being scarce relieved by the yellow letters in which the verses of the Koran are inscribed on large green boards running round the interior, while the dilapidated state of the Mosque shows the decay which, without the 'stitch in time,' will soon leave it a ruin. On moving the mats, we see the pavement, composed of the tombstones of early Lusignan and Venetian knights and nobles, whose arms and escutcheons are still distinctly visible."

## MUSIC AND THE DRAMA

## NEW PUBLICATIONS.

*Hanover Square: a Magazine of New Copyright Music.* Edited by Lindsay Sloper. July, August, September. (Ashdown & Parry).—If this magazine, the first of those established for the regular publication of new music, scarcely fulfills in the numbers before us the promise raised by its earliest contributions, the scarcity of original musical talent must in fairness be borne in mind. Among a thousand writers of music, there is often only one who has the divine creative faculty. For some unexplained reason, cultivated persons are much more exacting in music than in any other art. A man who has the intensest admiration for Shakespeare and Homer may yet find genuine enjoyment in the perusal of many of the poems that are annually published in the various countries of Europe. In like manner, the most enthusiastic admirer of Michael Angelo and of Raphael may appreciate the varied talent displayed at our annual Academy exhibitions. But amateurs of music must in general be placed in one of two distinct classes—those who understand and love the few great masters, and those who do not. Between these two classes there is no one point of sympathy. The devotees of Beethoven have in general no patience with the products of inferior minds; while the patrons of drawing-room composers have not the faintest conception of the intellectual greatness of the Bonn musician. There is, doubtless, much intolerance among musical people, writing, perhaps, from their too exclusive devotion to the art of their choice; but fastidiousness in music is, to some extent, justified by the prodigious gulf that separates the good composers from the bad. If a musician is not first-rate, he is usually unendurable. Hence the great difficulty in keeping up the high character of such a magazine as *Hanover Square*. In the July number, for instance, the first piece—always the most important—defies description. It is called 'A Moonlight Walk,' it is by Mr. G. A. Osborne, and it occupies five pages and a half. Beyond this it is nothing. It might be elaborately described by negatives; but having no idea itself, it can awaken none in others. A lullaby, by Mr. Albert Leaf, 'Sleep, my Baby, Mother's near,' is a much more genuine, and therefore more acceptable, production. It is full of grace and feeling. The first and last part of each verse are particularly elegant. The author has been less fortunate in the middle part, the sudden alteration in the character of the accompaniment arresting somewhat abruptly the otherwise smooth flow of the lullaby. In his extreme anxiety to give an aspect of simplicity to his song, the composer has run the risk of fatiguing his singer by allowing no rest or pause for the voice; and while we are fault-finding, we may also remark on the incongruity of singing the word "sleep" forte. Nevertheless, if the little coda, which is utterly misplaced, were taken away, it would be a very effective song. Still better is the second vocal piece in the July number. The quaint poem of Jean Ingelow, 'Nobody's nigh to hear,' has been treated by Mr. G. A. Macfarren with

sympathetic brightness. He seldom writes with such spontaneous spirit; and if he had not made an unworthy concession to popular bad taste in the concluding *cadenza*, we should be able to speak in unreserved commendation of the song.

The best piece in the August number is a *morceau de salon*, 'L'Étincelle,' an unpretentious, but musician-like and brilliant composition, by René Favarger, whose death has just been made public. M. F. Stanislaus has set Shakespeare's difficult words, "It was a lover and his lass," in very unvoiced fashion; and Miss Virginia Gabriel has, in a ballad, 'Little Blossom,' by no means increased her well-merited reputation. A *mazurka de salon*, by M. H. Roubier, in the September number, is not inelegant; and an essentially commonplace ballad, 'Twenty Years Ago,' by Mr. E. L. Hime, may find many congenial admirers. But the only essentially artistic piece in the number is a song, 'The Butterfly and the Flower,' by Mr. Alberto Randegger. It is characterized by the facile elegance which is the distinguishing quality of Italian writers, but it is spoilt by the extremely clumsy and unharmonious lines which have been adapted to it. Making every allowance for the difficulties of fitting English words to an Italian original, there can be no excuse for rhyming "meander" to "wander." When will song-writers learn that rhymes must be dictated by the ear, not by the eye?

*The Children's Musical Gem. Fourteen Nursery Ditties.* Edited by Madame Borroni. (Warne & Co.).—An amusing and very cheap collection of nursery melodies, such as "Three blind mice" and "Little Bo-peep," easily and correctly harmonized. An unpretending volume such as this may do much good in awakening a taste in young children for harmless music, undisguised by vulgarity.

## MUSICAL AND DRAMATIC GOSSIP.

A new farce, adapted by Mr. J. Morton from the French, was produced on Monday night at the Princess's Theatre. It is a bustling and amusing piece, its dialogue full of Mr. Morton's clever, if old-fashioned, pleasantries. A well-known *vauville*, 'L'Habit Vert,' has supplied the principal situations. Mr. Dominick Murray played humorously the part of its hero, a dramatic author.

Miss Neilson will appear on the 21st of September at the Theatre Royal Edinburgh in a new drama, written expressly for her by Mr. Tom Taylor.

The most interesting musical question of the day is now being discussed in a French court of law. Meyerbeer, the most scrupulous of men, left particular instructions that none of his incompletely composed should after his death be given to the world under his own name. He was still more anxious that they should not fall into the hands of musicians who might publish his thoughts as their own. So he left instructions that all his manuscripts should be preserved until one of his grandchildren should exhibit *une vocation musicale*, and that, failing this, the sketches should be burnt. Against the literal carrying out of these instructions M. Blaze de Bury appeals, insisting upon his right to have represented an opera, 'La Jeunesse de Göthe,' as much of it as may be written, the libretto of which is from his pen. Meyerbeer, whose projects and designs were during his lifetime more canvassed than those of any other composer, has even after death left ample material for legal settlement and idle gossip.

A certain Frau Maria Methua, née Scheller, of Hamburg, who has lately been singing to the Mormons, writes to the German papers an interesting letter, in which she speaks in the highest terms of the theatre of Salt Lake City, and of its management. She states that the stage is one of the very largest in America, that Shakespeare is not so much cared for as slighter authors, and that the theatre is much frequented. Money being scarce, the patrons of the drama are frequently obliged to pay for admission with orders for wood, potatoes and corn. 'Das Donauweibchen' and 'Käthchen von Heilbronn,' both unknown in England, were among the works performed.

Tourists may care to know that the Darmstadt theatre was to be re-opened on the 20th of August. They may also like to be warned that Herr Wachtel is singing at Wiesbaden.

The management of the Teatro Re, in Milan, has been undertaken by Signori Iremonger and Gullieri, whose buffo operas, 'Una Notte di Novembre' and 'Ser Matteo' are among the works to be produced.

It is stated that the first piece produced by the new management of the Théâtre Lyrique will be 'Rienzi,' the most conventional and least unintelligible of Herr Wagner's operas. The contemplated doings of M. Pasdeloup are canvassed in the French papers as seriously as though they were matters of state policy.

Herr Auer, the violinist, has accepted a three-years' engagement as Professor in the St. Petersburg Conservatoire and as conductor of the Russian Musical Society.

The Porte St.-Martin Theatre will re-open on the 1st of October with a performance of the drama of 'Cadio,' by George Sand, and Paul Meurice Melingue will play Cadio. Roger, the well-known tenor of the opera, who abandons music for the drama, will have an important part.

M. Pasdeloup has been appointed by official decree director of the Théâtre Lyrique.

The new season at the Comédie has commenced. No important work has as yet been brought out.

Among the recent promotions or appointments in the Legion of Honour are those of M. Émile Augier to the grade of Commander, and MM. Michel Carré and Joseph Bouchardy, dramatic authors, to that of Chevalier.

'Les Chambres de Bonnes,' a three-act vaudeville, by MM. Hippolyte Raimbaud and Raymonde Deslandes, has been played for the first time at the Variétés. It has a slight and rather amusing plot.

The experiment of MM. Meihac and Halévy, who, after obtaining great success by the extravagant libretti they have prepared for M. Offenbach, have attempted more serious compositions, is a failure. 'Fanny Lear,' the five-act comedy by these authors, produced at the Gymnase, is very little better than an ordinary melo-drama intended for the patrons of the Porte St.-Martin or the Ambigu Comique.

At the Palais Royal two novelties have appeared. The first is a species of burlesque, by MM. Grangé and Bernard, entitled 'Le Lys de la Vallée.' This is not very novel either in plot or title; pieces by Barrière and Thibout, which closely resemble it, being already in existence. 'Madame est couchée,' the second, is a not over moral one-act farce, by the same authors.

## MISCELLANEA

*The Great Pyramid.* — Colonel Sir Henry James, R.E., writing in the *Athenæum* of August 8th, proposes a substitute for his previous theory of the base-side length of the Great Pyramid. In his present position accordingly we read:—A. That the slope of the Pyramid extends beneath the pavement,—contrary to Col. Howard Vyse the actual explorer. B. That a difference in depth, of 20+8 inches, makes a difference in base-length of 2 feet 11 inches at each end,—an arithmetical error in excess, to the extent of 13 inches at each end; or, if the letter in question is to be read as *not* suggesting the addition of the 8 inches to the 20, the arithmetical error must be yet greater. C. That the assumed 2 feet 11 inches off each end would reduce the base from 763·6 to 757·5 feet, a further arithmetical error of a quarter of a foot in excess. D. That the actual depth from surface of pavement to bottom of sockets is 28 inches, whereas it is only about one-third of that depth, this is seen under the next head. E. That "the sockets" (plural) are all at that one level, whereas—according to the only evidence existing on either side of the question—they are not at the same level: those here referred to (the N.E. and N.W.) being respectively 5·8 and 10·0 inches below, and the other two are 0·2 and 19·4.—See 'Life and Work at the Great Pyramid,' vol. ii. p. 137. With all these extraordinary errors, how can we accept Sir Henry James's expression that 757·5

feet is "the length as measured"! It is, therefore, needless to proceed to consider his not reckoning any weight at all to the actual measurement of Col. Howard Vyse, but only to that of the French; or to criticize the claims of the long-subsequent Greek cubit, of 18·18 inches, as the ancient base-unit. As to his final idea—for the amusement of visitors to the interior of the Great Pyramid—involving the destruction or removal of the series of huge granite portcullis-blocks and of connected parts which would go with them, at the beginning of the first ascending passage; and (if the mechanical arrangements hinted at were fully carried out) the filling up of the entrance to the Queen's chamber, the laying of a tramway, and minor fixtures—I leave your readers to characterize the antiquarian taste involved in the suggestion of such treatment to that unique achievement of long pre-historic times,—the most ancient, accurate, and scientific, as well as the highest structure known to have been ever reared by human hands.

W. PETRIE.

*A Geographical Peculiarity.*—I have seen Mr. Pagan's letter in your last Saturday's number. His obliging explanation cannot, of course, be otherwise than satisfactory; and I am only sorry that want of time prevented my communicating with him when I was on the ground. I should then have spared you my letter upon what I certainly took to be a topographical rarity, judging from appearances, but which turns out to be so simple of explanation. I cannot say, however, I think the discussion profitless, inasmuch as it has satisfactorily verified what must otherwise have appeared upon our maps as a most unusual flow of the water. Also it seems to me that this simple solution of the matter opens the general question whether, in similar recorded instances, a like explanation might not possibly be the true one, if only it could be got at. With regard to the example mentioned by Mr. Gedge, at Auchnasheen, in Ross-shire, our attention had been already drawn to it. I hope to visit the place shortly, and ascertain if any artificial direction is known to have been given to the water on either side. But supposing we are left in the dark here, or in any other case, it must necessarily always remain a moot point whether at some period an artificial element may not have been introduced. Small local matters of this kind soon die out of men's memories, and on the ground itself, as in the case of Glen Lednock Head, every trace of human interference may have disappeared within a comparatively short period.

T. P. WHITE, Capt. R.E.

I have visited the bifurcation mentioned by Capt. White. I got the same account (from Mr. Walker of Glen Lednock) as that given by Mr. Pagan in the *Athenæum* of the 22nd of August. But may I add that neither Capt. White nor Mr. Pagan appear to have remarked, that there is an artificial stone barrier across the stream which throws the greater part of the water from Glen Lednock into Finglen Burn. In fact, no water flows into Glen Lednock except what passes between the stones of the artificial barrier and, doubtless, in floods, over it.

GEORGE GREENWOOD, Col.

*Humber.*—This etymology from *Aber* (compare Aberdeen, Aberdovey) is no new idea: see Bailey, *sub voce*. "Of hamn and aber, which in the C. Br. signifies the mouth of a river—*Leland*." I have not verified the reference to "*Leland*," but the quotation is sufficiently near to show the analogy. In Ptolemy, the Humber is called "*Abus*." This, again, is very near the British *Aber*.

A. H.

*Halse.*—In Bailey's English Dictionary, 14th edition, 1751, the word "*Halse*" appears thus: "*Halse* (hals, Teut.), the neck.—*Chauc.* To *Halse* (halzen, Teut.), to embrace—*O.*" The reading of the word *halsed* in the line, quoted in the *Athenæum* of the 8th inst., from one of Scott's ballads,

He haled and kissed his dearest dame,

—that he drew her towards him in his arms,—is literally correct.

J. H.

TO CORRESPONDENTS.—C. W.—J. W.—G. H.—A. J. H.—W. H. C.—W. L.—S. E. H.—E. W. B.—F. B.—F. W. M.—J. G.—received.

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12 Egg Spoons, gilt bowls.....	10 0 0	12 0	12 0	13 6 0	13 6 0	13 6 0
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12 Salt Spoons, gilt bowls.....	3 4 0	4 0	4 0	4 6 0	4 6 0	4 6 0
Mustard Spoon, gilt bowl.....	1 8 0	3 0	3 0	3 0	3 0	3 0
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Pair of Fish Carvers.....	1 4 0 0	1 10 0	1 10 0	1 12 0 0	1 12 0 0	1 12 0 0
Butter Knives.....	1 4 0 0	1 10 0	1 10 0	1 12 0 0	1 12 0 0	1 12 0 0
Soup Ladle.....	10 0 0	12 0	18 0	18 0	17 0	17 0
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Total.....	9 10 9	12 9	13 9	14 17 3		

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Ivory Handles.	Table Knives per Dozen.	Dessert Knives per Dozen.	Canners per Pair.	For Bedsteads, Wide.	3 Feet 6 in.	4 Feet 6 in.	5 Feet
34-inch ivory handles.....	13 0	14 0	5 0	2. a. d.	2. a. d.	2. a. d.	2. a. d.
34-inch fine ivory balance handles.....	18 0	14 0	5 9	Best French Alva Mattresses.....	13 0	13 0	13 0
4-inch ivory balance handles.....	20 0	16 0	5 9	Best Cotton Flock Mattresses.....	13 0	13 0	13 0
4-inch fine Ivory handles.....	28 0	21 0	8 0	Colored Wool Mattresses.....	1 0 0	1 0 0	1 0 0
4-inch fine and very ivory handles.....	37 0	27 0	12 0	Best Brown ditto, extra thick.....	1 8 6	1 16 0	1 14 0
Ditto, with silver ferrules.....	42 0	35 0	13 6	Good White Wool Mattress.....	1 14 0	2 3 0	2 7 0
Ditto, carved handles, silver ferrules.....	55 0	45 0	18 6	Extra Super do. ....	3 0 0	3 12 0	4 1 0
Nickel electro-silver handles.....	25 0	19 0	7 6	Good Horse Hair do. ....	2 5 0	2 18 0	2 8 6
Silver handles, of any pattern.....	84 0	54 0	21 0	Extra Super do. ....	3 12 6	4 7 6	4 15 0
Bone and Horn Handles.— Knives and Forks per Dozen.				French Wool and Hair Mattress for use over spring.....	4 0 0	10 0	6 0
White bone handles.....	13 6	11 0	3 0		2 17 0	3 15 0	4 4 0
Ditto balance handles.....	20 0	17 0	4 6		3 0 0	5 0 0	5 11 0
Black bone rimmed shoulders.....	18 0	15 0	4 6	Feather Beds, Poultry, in good Tick.....	1 16 0	2 7 0	
Ditto, very strong riveted handles.....	13 6	9 0	3 0	Do. do. best White do. in Bordered Linen.....	3 10 0	5 0 0	5 13 6

The largest stock in existence of plated dessert knives and forks, and of the new plated fish eating knives and forks, and carvers.

New Oval Paper-Maché Trays, per set of three..... from 20s. to 10 guineas.  
Iron ditto..... from 10s. to 4 guineas.  
Convex shape, ditto..... from 7s. 6d.  
Round and Gothic Waiters and Bread Baskets, equally low.

**GASELIERS in GLASS or METAL.**—The increased and increasing use of gas in private houses has induced WILLIAM S. BURTON to collect from the various manufacturers in metal and glass all that is new and choice in Brackets, Pendants and Chandeliers, adapted to offices, passages and dwelling-rooms, as well as to have some designed expressly for him; these are ON SHOW over his TWENTY LARGE ROOMS, and present, for novelty, variety and purity of taste, an unequalled assortment. They are marked in plain figures, at prices proportionate with those which have tended to make his Establishment the largest and most remarkable in the Kingdom, viz., from 12s. 6d. (two-light) to 23l.

**CLOCKS, CANDELABRA, BRONZES, and LAMPS.**—WILLIAM S. BURTON invites inspection to his Stock of these, displayed in two large Show-Rooms. Each article is of guaranteed quality, and some are objects of pure Virtù, the productions of the first Manufacturers of Paris, from whom William S. Burton imports them direct:—

CLOCKS ..... from 7s. 6d. to 45s.  
CANDELABRA ..... 12s. 6d. to 16s. per pair.  
BRONZES ..... 18s. 6d. to 16s. 6d.  
LAMPS, Modératrice ..... 6s. 6d. to 9s.  
PURE COLZA OIL ..... 3s. 6d. per gallon.

**BEDDING MANUFACTURED** on the Premises, and guaranteed by WILLIAM S. BURTON.

For Bedsteads, Wide.	3 Feet 6 in.	4 Feet 6 in.	5 Feet
Best Straw Paillasses.....	2. a. d.	2. a. d.	2. a. d.
Best French Alva Mattresses.....	13 0	13 0	13 0
Best Cotton Flock Mattresses.....	13 0	13 0	13 0
Colored Wool Mattresses.....	1 0 0	1 0 0	1 0 0
Best Brown ditto, extra thick.....	1 8 6	1 16 0	1 14 0
Good White Wool Mattress.....	1 14 0	2 3 0	2 7 0
Extra Super do. ....	3 0 0	3 12 0	4 1 0
Good Horse Hair do. ....	2 5 0	2 18 0	2 8 6
Extra Super do. ....	3 12 6	4 7 6	4 15 0
French Wool and Hair Mattress for use over spring.....	4 0 0	10 0	6 0
	2 17 0	3 15 0	4 4 0
	3 0 0	5 0 0	5 11 0
Feather Beds, Poultry, in good Tick.....	1 16 0	2 7 0	
Do. do. best White do. in Bordered Linen.....	3 10 0	5 0 0	5 13 6
Feather Pillows, 3s. 6d. to 14s. ; Bolsters from 6s. to 20s. 6d.			
Down Pillows from 10s. 6d. to 17s. 6d.			
Blankets, Counterpanes, and Sheets in every variety.			

**THE BEST SHOW of IRON BEDSTEADS** in the Kingdom is WILLIAM S. BURTON'S. He has FOUR LARGE ROOMS devoted to the exclusive Show of Iron and Brass Bedsteads and Children's Cots, with appropriate Bedding and Bed-hangings. Portable Folding Bedsteads from 11s.; Patent Iron Bedsteads, fitted with dovetail joints and patent bedding, from 1s. 6d.; and Cots, from 1s. 6d. each; handsome Ornamental Iron and Brass Bedsteads, in great variety, from 2l. 12s. 6d. to 20l.

**FURNITURE**, in complete Suites for Bedroom, of Mahogany, Birch, Fancy Woods, Polished and Japanned, Solid, always on show. These are made by WILLIAM S. BURTON, at his Manufactory, 84, NEWMAN-STREET, and every Article is guaranteed. China Toilet Ware in great variety, from 4s. Set of Five Pieces.

**TEA URNS, of LONDON MAKE ONLY.**—The largest assortment of London-made TEA URNS in the world (including all the recent novelties, many of which are registered) is on SALE at WILLIAM S. BURTON'S, from 30s. to 120s.

**BATHS AND TOILET WARE.**—WILLIAM S. BURTON has one large Show-room devoted exclusively to the display of BATHS and TOILET WARE. The Stock of each is at once the largest, newest, and most varied ever submitted to the Public, and marked at prices proportionate with those that have tended to make this Establishment the most distinguished in this Country.—Portable Showers, 7s. 6d.; Pillar Showers, 9s. to 12s.; Nursery, 12s. to 30s.; Sponging, 9s. 6d. to 30s.; Hip, 13s. 6d. to 31s. 6d. A large Assortment of Gas Furnace, Hot and Cold Plunge, Vapour and Camp Shower Baths. Toilet Ware in great variety, from 1s. 6d. to 45s. the set of three.

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